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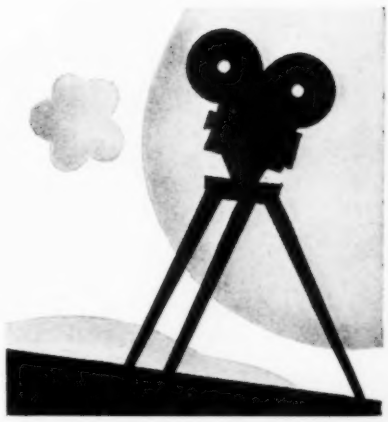

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Next Month

- Optical Printing has assumed important proportion in the motion picture industry. A comprehensive article will appear next month on this subject by one of the members of A.S.C.
- Another of Huggins' articles on composition touching on another important point of this phase of photography continuing the series.
- Riddle Me This will make its reappearance with an important subject discussed by various members of the American Society of Cinematographers.
- Of course there will be other articles touching on photography and the tools of the photographer in the studios.

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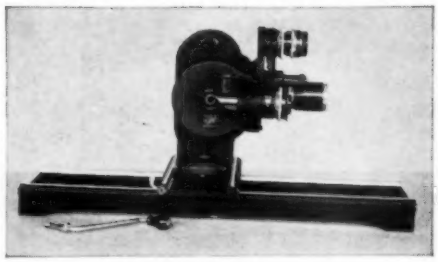

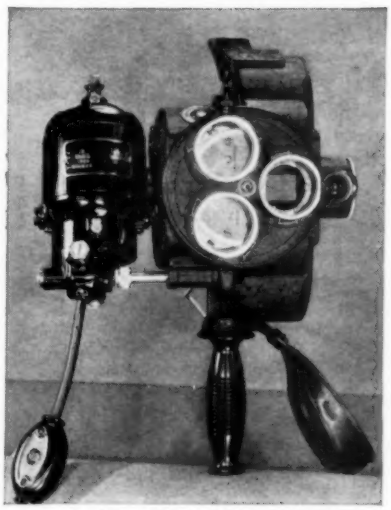

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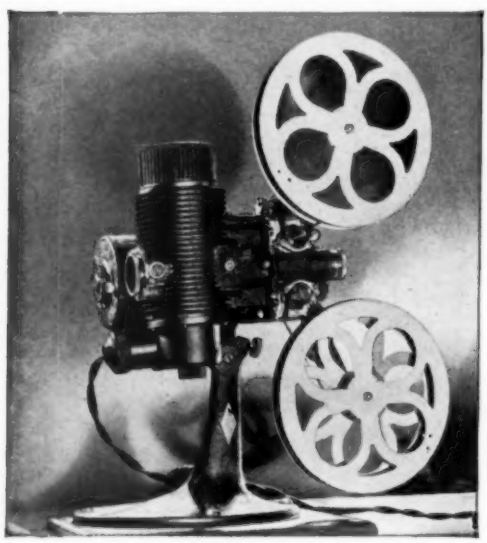

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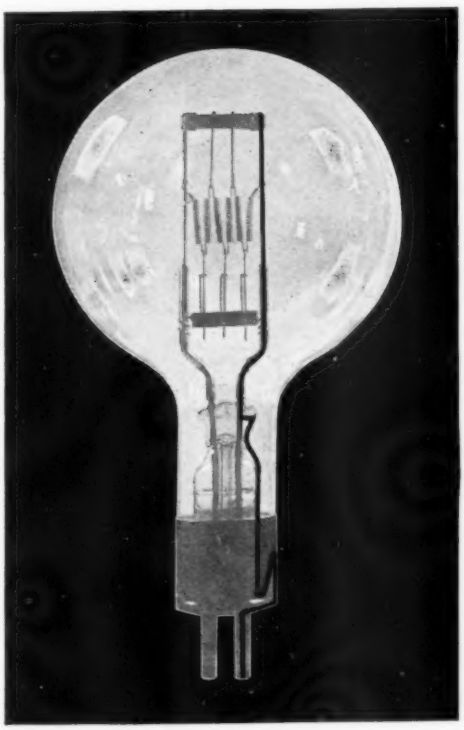
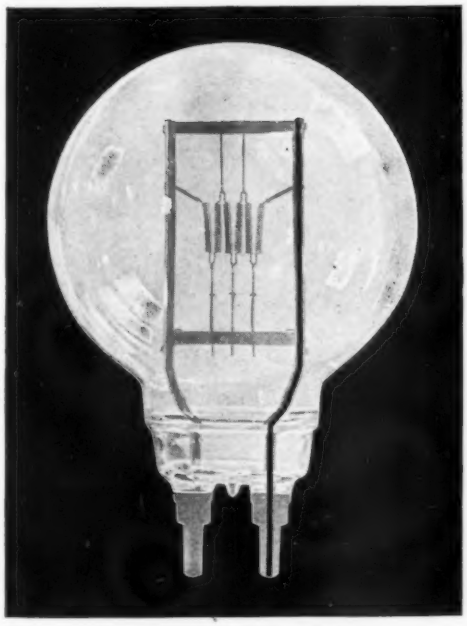


OLD TYPE 5 KW LAMP



NEW TYPE 5 KW LAMP

WHEN the electricians shift lighting equipment from place to place on the set, the lamp in each reflector is inevitably shaken and jarred. This snaps the filament about as if it had been struck with a mallet . . . or were the end man in crack-the-whip.

What takes the shock of these blows? Suppose we follow on the diagram, the complex path they travel through the supports of one of the old type 5 KW lamps. Down multi-metal supports into a brittle glass stem, up through basing cement and then down to the prongs . . . with leverage and weakness increasing all the way. At any one of eight points, a break may occur, bringing premature lamp failure.

The movies brought a tough life to this lamp—tougher than any previously known. But G-E scientists, alert to motion picture requirements, began work on a lamp that could live it. They tried stems of different kinds of glass. They tried other experiments. The lamps *were* improved, but not enough. Gradually these experimenters reached one conclusion: great improvement would result only from the elimination of the glass stem . . . a part of lamp making since the days of Edison.

To accomplish this they turned to the method of fusing copper and glass developed in making a 50 KW lamp for Light's Golden Jubilee. But a year and a half of intensive experiment and test, without a single let-up, went by before G-E made this new 5 KW lamp available to you. In this new type construction, as the diagram shows, the channeled nickel filament support takes almost a straight line from filament to prongs. Stronger, more rugged, more accurate and better adapted to studio needs, this new lamp has been rapidly adopted by studio after studio.

Improving existing types of lamps constitutes only part of G-E research. Other groups of scientists and engineers are steadily developing new lamps for new requirements. Still other groups constantly test and check a definite proportion of factory production on all types of lamps. Such work breeds confidence. Little wonder that studios from coast to coast use G-E MAZDA lamps for all their lighting needs. General Electric Company, Nela Park, Cleveland, Ohio.

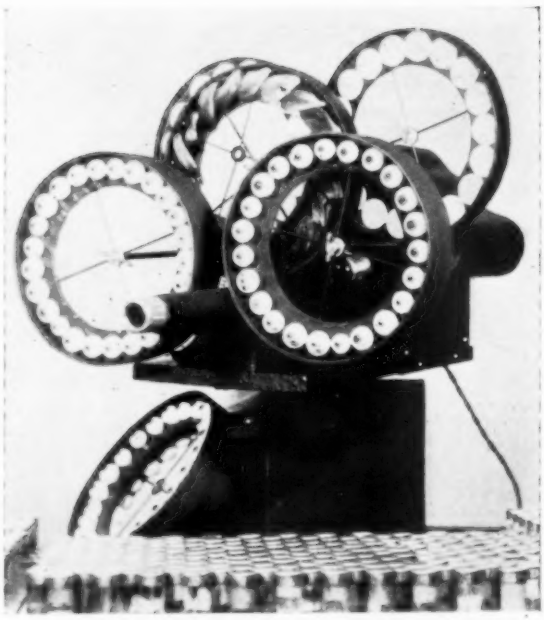
GENERAL ELECTRIC

MAZDA LAMPS

Measuring Color Intensities

by

Henri Coulon, B.A.



Machine designed to harmonize colors. Front discs contain glass eyes of various colors; center disc locks of hair of various colors and rear disc colors to match complexion.

WHILE much importance is attached to the production of films in color, and increasingly so each day, considerable room for improved rendition of blacks and grays in present day pictures is evident. The key to such improvement, in the writer's opinion, lies in a better understanding of the proper use of color intensities, and the necessity of transfering balanced intensities to the screen in related blacks and grays.

In moving pictures, as in any other artistic endeavor, the final result is beautiful and pleasing in direct ratio to the degree of harmony and balance achieved. Spanning the gulf between the technical and artistic units of production has oftimes proved a difficult accomplishment.

One of the major problems, in looking toward correct and harmonious tonal composition, is in correctly transferring into the gray scale, all the variations in brightness and color of the objects and persons photographed. Not alone to achieve truthful rendition, but to coordinate all the visual and photographic factors involved to form a satisfying and artistic whole.

We have, it is true, traveled far from the day when the camera registered the actors and settings indiscriminately, without regard for the tonal composition. Today, the values and areas of black, gray, and white are carefully planned to increase or diminish the importance of the different parts.

Despite this progress, however, and with due regard for the improvement thus far attained, it is still apparent that there is plenty of room, and much need, for still further advancement along these lines.

Appreciating that a precise knowledge of the photic reflectivity of various objects, such as colored wall draperies, floor covering, make-up, costumes, etc., should be of great value to those individuals responsible for the proper tonal composition of the final picture, there still remains lacking the consideration of one of the most important factors—bringing the individual into relation with the rest of the picture.

With all the laborious effort expended in ascertaining the relation between the visual and photographic values of settings, costumes and objects to be photographed, we find the significance of the proper relating of all these defined photic reflectivities to the judicious enhancement of the players themselves omitted. This is true, especially, as regards the correlating of tonal values of their eyes, hair and skin tones, aside from make-up, to form an artistic whole.

It has naturally been extremely difficult, heretofore, to bring the actor into the proper evaluation, as far as measurement of reflection factors was concerned. Up to this time, there has been scant opportunity for technicians to make a precise measurement of these factors in producing tonal balance—to say nothing of endeavoring to use such information in a manner so that the players' personalities and effectiveness of characterization could be further emphasized.

Diligent efforts have been made in this direction, with resulting "color charts" established with relation to the individual and for application using certain colors with known reflecting powers, and various trial and error methods. To the writer's knowledge, none of these have been of much apparent success, mainly because they were based to a large extent on personal theories and judgment.

These methods not only failed to add greatly to the proper tonal balance, but in many cases presented additional hindrance to artistic production, because they necessitated in many cases, the use of colors in sets, costumes and make-up which tended strongly to distract the players, and react unfavorably from a psychological standpoint upon those taking part. It is doubtful whether the full significance of the correct use of color psychologically, as it affects the actor, is realized, and to what extent this determines the ability for a fine interpretation.

By bringing into use newly designed, scientific equipment, which has been especially developed to measure personal color radiation, the writer plans to aid materially in mitigating, to some extent, the loss of tonal harmony at present encountered. By means of the data gained from such calibrations, it will be possible to determine the color values best suited to promote more truthful rendition.

The procedure will be to establish visual color radiation factors for the individual, and using this information conjointly with a new scientific system for achieving exact visual color balance, determine the colors best suited psychologically to the individual and blending them to the correct intensities for co-relation with the personal coloring.

This will result in the use of colors best suited to emphasize the coloring and personality of the individual—these colors will be in visual balance with the individuals own

(Continued on Page 427)

Cinematographers' Short-Cuts

by

Walter Blanchard

At top, improvised crane created by Clyde DeVinna in Africa while making "Trader Horn." Lower photo, ingenious mounting for camera on vertical fin of plane—steering of ship panoramed the camera.

THE unexpected always happens! No matter how carefully one may plan things when preparing for a picture or a location, sooner or later something unexpected is sure to turn up—a need for an effect not originally planned; unforeseen circumstances demanding equipment that isn't available—and then it is up to the Cinematographer to improvise something that will fill the bill. He alone cannot fail, no matter what is encountered! He may have to duplicate regular studio equipment with the crudest of makeshifts; he may have to bend the elements to his will; but—no matter how—he must bring back the picture! The experiences of the various members of the American Society of Cinematographers on such occasions are a glowing tribute to the ingenuity of these men.

Some of the most interesting exampes of such improvisation have occurred in the course of the many location-trips taken by Clyde de Vinna, A.S.C., who is probably Hollywood's champion long-distance filmster. When Clyde was in Africa a few years ago, making "Trader Horn," for instance, the company was trekking across the veldt when suddenly they encountered a lion at lunch. "Just the shot we need," cried Director Van Dyke. "Can we get it, Clyde?" De Vinna had his camera and film, but no reflectors—and reflectors are an absolute necessity in Africa. Clyde and his crew hastily rummaged through the truck, to see if there was anything that could be used as a stop-gap. There was! One of them erged with some gasoline cans, another with the leading lady's sleeping-kit. The cans were hastily hammered into flat, "hard" reflectors, the bed-sheets tacked onto poles, to make "soft" reflectors—and before the actors had their make-up on, the camera staff reported themselves ready!

Another time, Director Van Dyke called for a crane shot—and the nearest camera-crane was in Hollywood, 7,000 miles away! Nothing daunted, Clyde proceeded to produce a crane. Using a parallel for a foundation, he anchored some forked branches to it, running a relatively straight limb between them, as a bearing for the crane-arm. The boom itself was simply a long branch, slightly curved at the bearing-point, which was laid across this horizontal limb. At one end perched Clyde and the camera; the other end was moved up and down by a block-and-tackle, operated by man-power.

Cinematographer Daniel B. Clark, A.S.C., in the course of over nine years as Chief Cinematographer for such Western stars as Tom Mix and George O'Brien (Clark recently finished his 85th production with Mix) became one of the profession's most fruitful improvisators. The years of experience in such work taught Clark never to start a location-trip unless prepared as fully as painstaking forethought could make him; yet nevertheless, the unexpected often showed up. Once, for instance, when on location in Washington, making some snow-sequences, the Director suddenly decided that he must have a night-scene of a certain picturesque cabin. Clark had no reflectors (they would not have been needed in the ordinary course of the work); no lights; not even any flares. Ordinarily, one would have said that under such handicaps, the best thing to do would be to tell the director to forget his night-scene. But not Dan Clark! He literally made the elements give him his night-effect. Have you ever noticed how, when the sun reaches a certain angle, late in the afternoon, its rays are reflected back from windows, for all the world as if the rooms behind them were illuminated? Dan Clark had noticed it—so he waited until the sun was at the proper angle, set up his camera to catch the reflections, slipped in a heavy filter to correct for his night-effect—and the scene was made.

Another time, on location at a remote whaling-station in Alaska, he was suddenly informed that nothing would suit the director but a "dolly" shot—and there wasn't a "dolly" within thousands of miles. So he built one. One of the whaling steamers was going to Kodiak the next day, for supplies; and Dan remembered seeing the remains of an antique Ford in the Kodiak junkyard. The axles and wheels of this flivver, plus a few two-by-fours and some planking, gave him his "dolly"—the director got his "dolly" shot—and everyone was happy. On the same trip, the director decided that a shot of the harpoon-gun, shooting straight

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An example of high key lighting . . . note absence of blacks with whites and light half-tones predominating.

The "Language" of Tone

by

L. Owens Huggins, A.S.C.

LAST month we considered the "Language of Line," with the idea of bringing out the importance of lines in expressing certain moods or emotions through photographic and cinematographic means. In this article we will try to show that "Tone" speaks an equally expressive language.

When used in connection with Graphic Art, the word "Tone" refers to the variation of light and dark in a picture. The Italians term it "Chiaroscuro"—literally "light and shade"; the Japanese call it "No-Tan"; and in English we often speak of it as "Key." To the eye, this visual "key" can speak as expressively as can the "key" of music; in fact, there is a considerable similarity between the two applications of the word. In music we have a definite range of tones; consider the keyboard of a piano, which gives the artist a range of nearly a hundred tones with which to paint his sound-picture. Ordinary music will be played on a fairly limited range of keys around the middle of the keyboard; but lighter, more sparkling selections carry him farther and farther up into the lighter, treble register, while heavier harmonies call for greater dependence upon the sombre, bass register. Visual "key" is much the same; it can be imagined as a sort of keyboard, ranging from the heaviest of blacks up through an almost infinite series of gradations to the lightest of greys—and finally pure white. And, just as a musician can choose his musical tones to suit the desired mood, so, too, can the painter or photographer vary his visual tones—in other words, his "key"—to suit the mood he wishes to convey.

Thus, a normal key means that we find the relations of light shade in our picture approximating that of nature—utilizing, so to speak, pretty nearly the whole of the keyboard. A high key means that we have a predominance of the lighter tones in our compositions, with very few shadows (and those usually light)—quite as though we had utilized only the treble on our piano. A medium key means that our tones have been compressed into a series of greys: the high-lights being light greys and the shadows dark greys, with only a rather limited scale of intermediate tones in between—quite as though we were playing on only the middle octaves of our piano. A low key shows a majority of dark tones, with very few light ones—just as though we utilized only the heavy, bass notes on our piano. In painting, Rembrandt's work is a typical example of perfect low-key effects. By examination of his paintings, it will be found that as a rule less than 10 per cent of the area of his canvas is shown in light, the remainder being in deep shadow.

Now, just as the key of music plays a vital part in producing the desired emotional response from the hearers, so, too, does the visual key play a predominant part in creating emotional response in a beholder. By far the greater portion of our impressions are gained visually; and in the years we have been making motion pictures, we have found that by the understanding use of this tool known as "visual key," we can subtly convey dramatic impressions to the subconscious mind of the beholder, making his mind and emotions more receptive to whatever dramatic effects the scene's action and dialog may convey.

Just as every scene has some definite dramatic mood—some definite, emotional response which it seeks to arouse within the beholder—so, too, has each scene—each type of action—its definitely indicated visual key, which harmonizes with that emotional key.

With a high key, we can express happiness—gaiety—joy—delicacy, and freshness. In the accompanying illustration we see that the high-key effect helps to bring out the characteristics of the young girl. Here is suggested the youth and grace of the sitter, joy and freshness. To attempt to portray this sketch in a low key would spoil the effect we wish to achieve.

An extremely low key will suggest restraint—severity—sombreness; and sometimes grief and sordidness.

A medium key, with a predominance of greys, but lacking any bright highlights or extreme shadows, obviously suggests fogginess; hence, mystery and vagueness.

Its opposite, an equally limited tonal scale in which the intermediate tones are suppressed, leaving only the extremes of highlight and shadow, suggests the bizarre—often the supernatural or horrible—always the unusual.

Here, therefore, we find another valuable tool by which we can bend photography to the artistic purpose of expressing definite emotions, in harmony with our story values.

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Candid Photography on the Streets

by

Clarence Slifer, A.S.C.

IN THE vast field of photographic matter, one of the most interesting subjects is the man on the streets. The streets are the cross-sections of humanity, for on them are found the rich, the poor ,and those so often referred to as the common people. On this great stage is found comedy, drama, pathos, and many things of human interest.

The streets are subjects with many moods. They change with the weather, the locale, and the time. People, clothes, architecture, modes of transportation, shop-windows, and many other things, all change. To perceive the vast change that time alone makes, look at some photographs made only a few years ago. Glance through your college or high school year-book. Clothes that appeared stylish and normal to us in those days look the least bit "corny" today. Styles that women called "simply stunning" in 1929 are just that in 1934! Mothers and daughters looked alike, with knee-lengthed skirts, loose frocks, and cloche hats. How odd the styles of today will seem tomorrow, with women now wearing puffed sleeves and creations that make them resemble football players. These rapid changes are what makes street photography so valuable, if only for sentimental reasons.

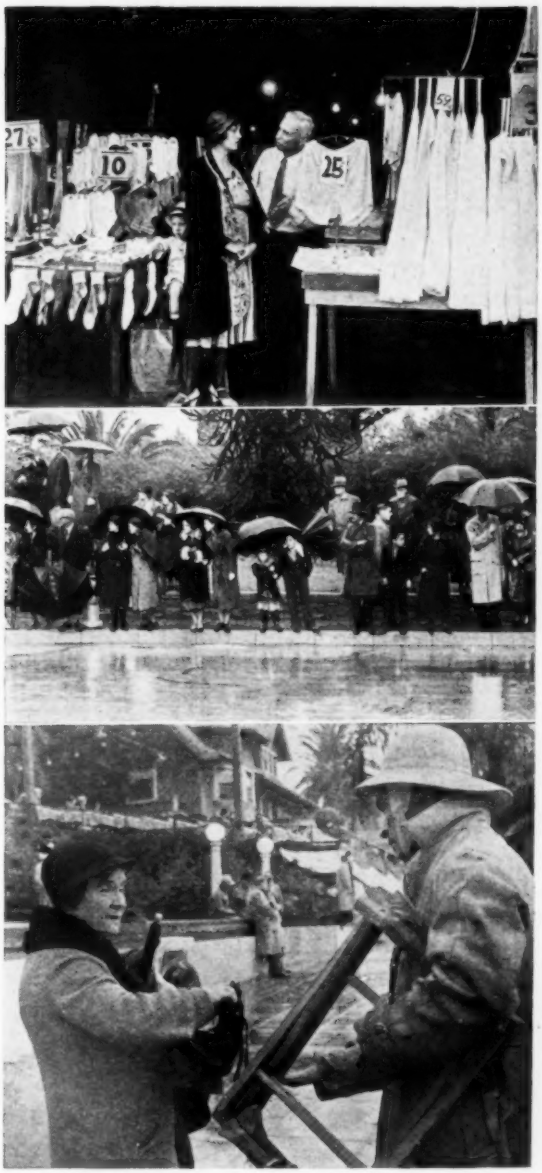
Both photography and painting were born, by the desire of man to impart to others, his mental creations or visual impressions. Photography has certain limitations and handicaps. It is not as quick and as flexible as the eye. The painter with a little imagination can portray these fleeting, visual impressions. The quality of the light, the speed of the action, the depth of focus of the lens, the flexibility of the camera, and the ability to sense interesting situations before they actually happen are problems that the cameraman must deal with. However, photography has an advantage over painting, in its ability to record in minute detail the scene and to make many scenes in a short space of time.

As an artist carefully chooses the most satisfactory medium with which to portray his subject, so must the cameraman exercise the same degree of care in selecting his equipment. The most satisfactory solution of the camera problem in street photography is the selection of a miniature type of camera. It is readily seen that this camera will better meet the conditions found in this field than any other camera.

Today, there are many types of miniature cameras. All have their specific advantages and all can be used for this type of photography. My own choice is the Leica. I have successfully used one for candid pictures for several years. It is very compact and inconspicuous. With a small amount of movement of one hand it is possible to make an exposure and to prepare for another without looking at the camera. The advantage also of being able to use lenses of different focal lengths and various types of view finders is obvious.

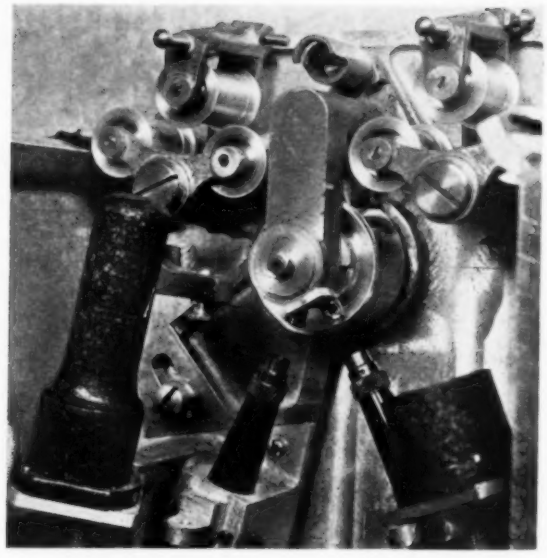
Recently, we have heard and seen much of a type of photography described as "candid photography." It is nothing more than the making of unposed pictures without the subject's knowledge. They are extremely frank pictures and are natural with one exception. Pictures made of people, while they are talking or moving about, sometimes portray them in ridiculous positions. These pictures are not natural. They are photographs of only one step

(Continued on Page 424)



Top photo might be captioned "To Spend Two Bits or Go Without," however, it was shot in fair light; 1/40th sec.: f.5:6; 50mm lens. Center picture made on dull day, drizzling rain; 1/40th sec.: f.4:5; 90mm lens. Bottom picture: Dull light: 1/60th sec.: f.4:5; 35mm lens. All made with a Leica on Dupont Superpan film.

New System For Foreign Translations



Close view of Reagan-Day Synchronizing Machine, showing sprocketless drum, vacuum-perforations, vacuum intake, and double photocell system (the photocell of the right-hand unit removed to better show the drum). Left-hand photocell, actuated by exciter-beam reflected by mirror, operates relay circuits; right-hand assembly operates reproducer.

by

William Stull, A.S.C.

THE problem of foreign distribution needs no introduction to anyone connected with the motion picture industry. Where a silent picture commanded a world-wide audience, a talking picture finds its audience reduced to the comparative handful who understand the language of the recorded dialog. Economically speaking, as well as artistically, this has become one of the gravest problems of the day; for where, only a few years ago, half or more of the gross income received by a film might accrue from its foreign showings, today this percentage has declined almost to the vanishing point—and diminishing domestic returns can certainly not replace it.

The leaders of the American film industry have not been blind to this situation: for nearly five years producers and technicians alike have exercised their ingenuity to overcome the apparently unsurmountable obstacle of speech. To date, three basic methods have been used in attempts to cope with the situation.

The first, and most obvious, was the making of "Foreign Versions" of domestic films, with players actually speaking the foreign language. For a time, practically every major studio maintained—either here or abroad—a staff for the making of these "Versions"—stock companies of French, German and Spanish speaking players, with writers and directors equally familiar with the idiom in question. One firm even went so far as to establish a large studio in France, in which foreign versions of its American productions were re-created in sixteen different languages. But this method has not proven satisfactory, not alone because of the added cost, but because the world audience had been "sold" on American players, and did not take kindly to imitations.

The second method—still largely practiced—was that known as "Voice-doubling," or "Dubbing." In this, the picture of the domestic version was used, synchronized (after a fashion) with a sound-track recorded by foreign actors, speaking an approximation of the original dialog. This has the merit of being less expensive, and of giving the foreign customers their American favorites; but it is difficult—if not utterly impossible—to maintain an acceptable approximation of synchronism, and yet retain the spirit of the original dialog and action. For every successful example of such "dubbing," one can count a dozen rank failures. In some countries, these versions have been literally laughed and boo-ed off the screens, while there are many instances of hitherto immensely popular stars being stripped of their popularity by crudely dubbed films.

The third—and least satisfactory—method is that of superimposed foreign-language titles. In such an instance, the film in its original version is shown with titles in the foreign tongue superimposed upon the picture, wherever explanation seems needed. This method obviously minimizes the entertainment value of a production, often grossly distorting the story, or eliding important, but untranslatable, points, and the superimposition of the titles naturally sacrifices photographic quality to a marked extent.

A new method, more perfect than any of these, is urgently needed: and such a method has recently been presented to the inspection of the Research and Testing Committees of the American Society of Cinematographers. Known as the Reagan-Day Screen Translation Process, it embodies much that is new, either in principle or application, and, as a whole, it shows considerable promise. Associated in the development of the process are G. P. Reagan, its inventor; C. S. Franklin, Sound Engineering counsel; Jean Goudneau, Language Consultant, and James S. Brown, Jr., A.S.C., General Technical Advisor.

The new system, while essentially a development of the dubbing method, is based on a more exact study of linguis-

tics and upon some very interesting mechanical developments. Taking as the starting-point of their development the unquestionable fact that foreign-language audiences want American players, speaking (directly or otherwise) whatever idom may be comprehensible to that audience, and that this must be done in such a way as to preserve the illusion of reality (i.e., in perfect synchronism, and in a perfect translation), the inventors have naturaly decided that an improved system of voice-doubage would clearly be the required answer to the problem. The next step was a study of the results of existing voice-doubling systems; and it was found that the chief shortcomings of these lay in the closer shots. In these shots, if the synchronization were approximately correct, the meaning was almost invariably distorted; and if the meaning of the original story were maintained, synchronization was almost invariably impossible. In the majority of the longer shots, the existing methods could be retained acceptably, as synchronization—or lack of it—is rarely apparent.

The solution of the problem, then, lay in some method of securing the desired effects of naturalness, expressiveness and simplicity in translating the closer, more intimate scenes, where both expression and synchronization play so vital a part. Obviously, the actors' lip-movements must correspond with the inflection of the sound; equally, the dialog must express, as nearly as possible, the thought and spirit of the original scene. Such an effect might be achieved by the expedient of having the original actor make special cose-ups actually speaking the foreign dialog, the sound-track of which could then be replaced by the more perfect speech of the voice-double. This was not considered satisfactory, however, because it was found that very few actors can give a convincing performance (even in a short scene) while speaking a language to which they are not thoroughly accustomed. Moreover, they would speak it at a tempo different from that of the rest of their performance, making it necessary, naturally, to record the foreign dialog for these shots differently—often more haltingly—than that of the rest of the picture. And the natural effect is dispelled.

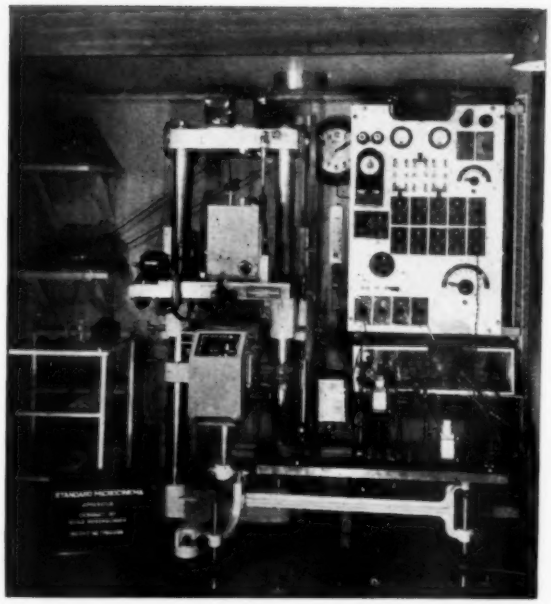
However, reasoned the inventors, why could we not devise a code, by which our actors could speak phrases or sentences which are reasonably intelligent in their own language, and which will synchronize perfectly with the required lip-movements for the foreign dialog? With the assistance of M. Goudneau, this was done, and a code-book of English, Spanish, French and German is now being completed. By this means the coding of any scene is simplicity itself.

The procedure followed in translating a film by this method is as follows: First, the dialog is translated; the translation may be as free or as literal as desired to suit the foreign audience for which the film is intended. When this is studied, it will be found that the majority of the scenes—all of the longer shots, in which lip-movement is not greatly noticeable—may be doubled by existing methods. The scenes in which such existing methods cannot be followed—the more intimate scenes and close-ups—are then coded. Thereafter (either during actual production, or for a short period of retakes), the original actors remake these "key scenes," acting their original parts, but speaking the coded dialog, using English words which give the required lip-movement. These scenes may be photographed silent, but it is preferable to record the coded dialog, which simplifies the synchronization afterward. Since the sound-track made at these takes is not actually used, the director or a language consultant may cue the players in their reading of the coded speeches.

In the completed, foreign-language film, these coded "key shots" are used, with carefully recorded, foreign-language sound-track perfectly synchronized. The synchronization is rendered easier by the use of an ingenious reproducer, which may be used either as an auxiliary to the cutting process, or as part of the recording equipment. The device consists essentially of a special ,sound-reproducing head heavily filtered against vibration, and fitted with an extremely quick-acting, magnetic clutch. The film is led from the feed reel, over a series of idling-rollers, past the sound-sprocket, which is, in reality, not a sprocket but a drum, and similarly back to the take-up. This sound-drum, which carries the film past two scanning-heads, is hollow, and pierced with several rows of small, spirally-arranged holes; by means of these, the film is held on the drum more tightly than on a sprocket, by a suction or vacuum system. This eliminates any of the "flutter" so inescapably connected with any sprocket system. The two sound pick-ups, though identical, serve different purposes; one (seen at the right in the illustration) reproduces the sound in the normal manner; the other serves to operate a series of automatic relays which disengage the magnetic clutch, immediately stopping the progress of the film, whenever a modulation strikes this pick-up. The machine is said to be able to start or stop in less than 1/200 second, accordingly, for practical use, it is possible to run a section of sound-track through the machine with the assurance that it will stop exactly at the start of every speech—and be able to reach 90 feet per minute (standard sound speed) before the modulation reaches the second pick-up.

By the use of this system of coded dialog and this valuable mechanical adjunct to cutting and re-recording, the system's sponsors claim to be able to produce perfect foreign-language versions, which sacrifice neither the favorite players, the meaning of the dialog, nor the illusion of reality. Moreover, once the coded scenes have been photographed, the actual voice-doubling (with, of course, dialog that has been written under the supervision of the studio) can be accomplished at any time or place. This is important in meeting modern conditions, as many countries require that all voice-doubling in their idiom be done in their own country, by their own nationals.

The writer has seen tests made by this system, in which actors definitely known to be totally unacquainted with any foreign language were made to speak, fluently and expressively, in Spanish and French—with such perfection of synchronism, and such absolute naturalness, that it would be imposible to identify the result as voice-doublage. The system evidences great promise, while the auxiliary machinery should, even in domestic production, prove of notable value in itself, and as the foundation of an extensive system of film-viewers, re-recording equipment, etc. The entire system, coding, machinery, and all, is said to have been completely covered by patents allowed in the U.S.A. and all foreign countries.



Microcinema Apparatus at the Rockefeller Institute. It consists of four separate units: the optical bench with microscope (in constant temperature box), light source and condenser system; camera support with driving mechanism and focusing device; two driving motors; control board.

Motion

WHEN used as an aid to research the value of moving pictures for the analysis of motions is obvious, as through its use, we have become the master over the elements of time. Speeds which are too fast or too slow for the human eye to perceive can be easily studied after they have been photographically recorded on motion picture film by means of "slow motion" or "time lapse" respectively.

About ten years ago work was begun at the Rockefeller Institute for Medical Research (Department of Experimental Surgery) to study, with the aid of microscopic motion pictures, the structure and physical behavior of the various cells of tissue and blood, both normal and malignant. Since then a great number of film records were obtained at low and high magnification the division of cells of tissue and blood, mostly "time lapse," which show activities of cells and structural details hitherto not observed. Film records from Dr. Alexis Carrel's fragment of living tissue extirpated 22 years ago from the heart of a chick embryo, show groups and single cells growing and thriving actively. A very thin undulating membrane around white blood cells has actually been discovered with the aid of microcinematography. This membrane escapes observation under ordinary circumstances and only its folds, which look like fine threads, have been observed before, but were thought to be so called "pseudopods." Other film records made by the author show at very high magnification the division of cells of tissue and blood, extremely fine nerve cells and their growth, the circulation of blood through arteries, veins and capillaries, embryos at various stages of their development, etc.

At the Hospital of the Rockefeller Institute a special apparatus was installed for taking film records of human capillaries, especially those of patients afflicted with heart ailments, in order to study the speed of the blood flow and the motion of the capillary walls. The photography offered a number of difficulties which had to be overcome. The field of observation on the patient's finger was approximately 1/16 of an inch in diameter and had to be illuminated by an intense light traveling through the lens, the same which also projected the image cnto the film. The light source consisted of a specially constructed high intensity arc lamp and a number of condensing lenses, cooling cells and light filters. Polarized light was employed, to eliminate the glare, otherwise reflected from the top layer of skin, by passing the beam of light through two Nicol prisms, inserted into the optical system. The film records obtained had magnifications ranging from 20 to 40 diameters on the film frame, the taking speed were ranging from 10 to 20 images per second.

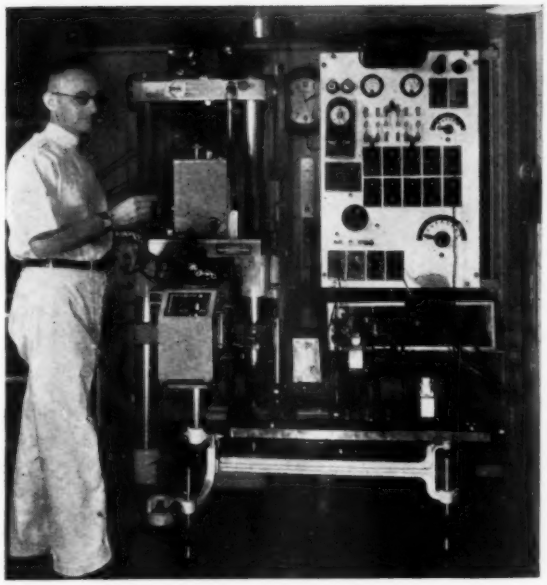
Cinema research work extended also into the field of bacteriology. The author had the privilege of having collaborated with the late Dr. Hideyo Noguchi in securing film records of active cultures of the various micro organisms, for the study of their motility. Another series of films was made with Dr. J. Bronfenbrenner, Washington University, St. Louis, Mo., of coli bacilli and their destruction by bacteriophage.

Naturally the author's work at the Institute is mainly concerned with medical problems, while, in his capacity as a consulting cinema specialist, the work is extended into other fields of science with a great variety of subjects, each new subject almost invariably offering new cinematographic problems requiring often design and construction of new apparatus and devices.

A 2-reel film produced on "Colloids" required a great amount of microcinema work at extremely high magnifications. It was necessary, for example, to take films of the so-called "Brownian Movement" that is the rapid and erratic motion of the smallest particles visible at maximum magnification in the ultra microscope. The dancing of ultra microscopic particles in believed to be caused by molecular bombardment. For instance, some of the particles in a colloidal gold solution are only 1/100,000 of an inch in diameter, the smallest fhing ever seen.

Motion pictures of surgical operations have been made in great numbers as their usefulness is generally established. Unfortunately, a great many of these films, taken by inexperienced amateurs, and projected everywhere, do not measure up to a medium standard in the way they are photographed and edited, and are, therefore, more harmful than beneficial to the motion picture art.

Mention should be made in particular of one surgical



Heinz Rosenberger, the author, standing alongside the Microcinema Apparatus which is mentioned in this article. All of this equipment was designed by Mr. Rosenberger.

Pictures as an Aid in Science

by

Heinz Rosenberger, F.R.M.S.

The Rockefeller Institute For Medical Research, New York, President, New York Microscopical Society,

film, the making of which was quite interesting. The problem was to show in the film the complete operating technique of a prostate operation. The field of the entire operation was not more than about one-half inch in diameter, and the operation performed through a cystoscope ¼ of an inch inside diameter, through which the instruments, an electro-loop and an electro-knife, were introduced. About one-half of all scenes were to be taken in such a way as to show clearly the cutting away of obstructing tissue inside the urethra, as seen by the surgeon through the eyepiece of his cystoscope. After careful technical and anatomical studies on patients during operations and on a corpse, a plastilina model five times natural size was made in several sections and the whole mounted on an optical bench, together with camera, light sources and operating instruments, also made five times their original size. The "operation" on the model was again "performed" taking single exposures (animation). These scenes, after being completed, were spliced alternately with outside scenes of the actual operation. The illusion was apparently perfect judging from questions asked by doctors after seeing the film as to how it was possible that so much light could be obtained and pictures taken through such a narrow opening in the cystoscope.

Making motion pictures for science means also work on the drawing board and in instrument shops, as in a great many cases special apparatus are required. This is particularly true with microscopic motion picture work. The Standard Microcinematographic Apparatus (see picture), which has been developed after many years of experience, is an answer to the many requirements, which come up in scientific research work. The work with high magnifications call for greatest possible precision and the difficulties, optical, mechanical, experimental, etc., increase, with increasing magnifications, quite out of proportion.

The production of motion pictures for science requires among other things a real love for difficulties. Patience and perseverance are other qualities that should be mentioned. The author would like to relate two instances, in which it took weeks, and even months, to make a few feet of microscopic film. One object was the growth of living nerve fibers to be recorded at high magnification, and the other was the development of a culture of yeast, starting from a single yeast cell until, through the budding of daughter cells, the entire field was covered with numerous cells. In both cases in the beginning the preparation looked healthy and developed normally until suddenl,y for no apparent reason, it died and disintegrated before the picture could be finished. Experiments had to be started time and again, until finally they were crowned with success. The waste of time, material and effort was compensated for by the satisfaction that one gains from good results.

Looking back over some 15 years of experience, and visualizing the many films made, it is highly gratifying to observe a steadily increasing demand in the work from the time his first pictures were projected, showing for the first time at high magnification the activity of living tissue and blood cells and their structural details and also other microorganisms and their behavior.

These films have been projected time and again at scientific gatherings, for instance, at the Rockefeller Institute for Medical Research, National Academy of Sciences, Washington, D. C.; Academies of Medicine, here and abroad; Optical Society of America; International Congress of Photography; International Congress of Physiology; Kaiser Wilhelm Institute, Berlin; New York Microscopical Society; American Chemical Society; Societe de Chimie Industrielle; Eastman Kodak Research Laboratories, and many others.

PHOTOGRAPHY of the MONTH

"SMOKY"

Fox Production

Photographed by **Daniel B. Clark, A.S.C.**

Photographically, the production is restrained—unmoviesque. Abounding in superbly-photographed exteriors, there is none the less none of the somewhat self-conscious striving for pictorialism which marks most Westerns. Instead, the camera very wisely steps aside, and allows the viewer to focus his attention solely on the story of a cowman and his horse, presenting the tale simply, effectively, and realistically.

Such a treatment would naturally be at fault in the average Western, where all too frequently spectacular camerawork must bolster up a weak story, weaker direction, and inept acting: but in this particular case, Clark has acted wisely. Any other treatment would have robbed the tale of its essential quality of truthfulness.

Viewed from the technical viewpoint, "Smoky" could well serve as a text in the restrained use of filters. Save for the night-scenes, I doubt if anything heavier than a 23-A was used; but what filters have been employed, have been used to perfection. Every scene has been treated in a way that brings out the best, without exaggeration, while certain sequences, obviously made under highly unfavorable light-conditions (including a rain-storm), pay high tribute to Clark's ability. The interior sequences are quite as well photographed as the exteriors; several of them are highly instructive examples of careful "source-lightings." In a word, "Smoky" is Dan Clark, A.S.C., at his best—and exhibiting a restraint and dramatic feeling rarely encountered in outdoor films.

"SHOULD LADIES BEHAVE"

Metro-Goldwyn-Mayer Production

Photographed by **Ted Tetzlaff, A.S.C.**

When a stage-play is translated to the screen, the cinematographer seldom enjoys the spectacular opportunities incident to a true motion picture. This adaptation of "The Vinegar Tree"—even though a better adaptation than is the rule—adheres to precedent in this respect. Cinematographer Tetzlaff, however, not only makes the most of all of his opportunities, but has turned out an extremely competent job of camerawork. He has treated the cast with an extremely favorable lens, and made the most of the many interesting settings. Cinematographer Tetzlaff has once more demonstrated his right to be accounted one of the rising young men of the industry.

"THE MAD GAME"

Fox Production

Photographed by **Arthur Miller, A.S.C.**

This filmization of the great American "Snatch Racket" naturally offers opportunities for spectacular effect-lightings and angles. Arthur Miller, A.S.C., has done excellently by the film, despite the director's penchant for somewhat excessive dollying in the earlier sequences. Whether or not one is still interested in gangster themes, Miller's camerawork makes "The Mad Game" worth seeing.

"ALICE IN WONDERLAND"

Paramount Production

Photographed by **Henry Sharp, A.S.C.**, and **Bert Glennon, A.S.C.**

Special Effects by **Farciot Edouart, A.S.C.**, and **Gordon Jennings.**

"Alice" will unquestionably call forth a good deal of controversy; but there can be no argument over the work done by the photographic personnel. Cinematographers Sharp and Glennon have turned out a thoroughly artistic production—photographed in a perfect spirit of phantasy, yet always avoiding the unduly fantastic. It was no easy assignment these two faced, not alone in this matter of cinematic mood, or of correctly visualizing Lewis Carroll's celebrated story, but in making believable the many players who appeared in grotesque masks. That they have succeeded so signally is a high tribute to their cinematic good taste and ability.

The Special Effects Photography contributed by Farciot Edouart, A.S.C., and Gordon Jennings is superb. Virtually every sequence embraced some difficult problem of Special-effects cinematography, and the situation was doubly hampered by the necessity of meeting an early release-date; but these two wizards of the camera met every obstacle with thir accustomed ingenuity, and came through with flying colors. Without their superb work, the production could not have been made.

"GOING HOLLYWOOD"

Metro-Goldwyn-Mayer Production

Photographed by **George Folsey, A.S.C.**

It isn't the bad pictures that give a reviewer gray hair—it's the Great ones! If you do justice to the good pictures, sooner or later you'll find yourself adjectiveless in the face of a really superlative one. "Going Hollywood" is that kind of a picture. Viewed either as entertainment, or as an example of film-technique, it's a knockout. Especially in the matter of Cinematographer Folsey's contribution, which gives a new meaning to such moth-eaten phrases as "brilliant," "scintillating," and so on. From start to finish, it is very close to photographic perfection: not merely a few scenes here, or a sequence there, but consistently ringing the bell, scene after scene, sequence after sequence, throughout the entire production. And that goes double for the way Folsey has photographed the star, Marion Davies. Miss Davies has been in front of the cameras long enough so that one could reasonably expect it to show a little—even with such an artist as Folsey photographing her; instead of which Folsey makes her look younger—and vastly more devastating—than all of next year's Wampas baby stars.

"EIGHT GIRLS IN A BOAT"

Charles R. Rogers Production for Paramount

Photographed by **Gilbert Warrenton, A.S.C.**

For a long time, this department has been waiting to see Gilbert Warrenton, A.S.C., given a really worthwhile opportunity again; and here it is. Cinematographer Warrenton has, in fact, made the exteriors some of the best of their kind yet seen. Technique, composition, lighting, and filtering are all equally fine. The interiors are likewise excellent; beautifully handled, with some extremely good effect-lightings. Warrenton has maintained his dramatic moods with fine feeling, and has at all times dealt kindly with the players.

"HIS DOUBLE LIFE"

Produced by Eddie Dowling and Arthur Hopkins

Paramount Release

Photographed by **Arthur Edeson, A.S.C.**

This production is really a tribute to Cinematographer Edeson's ability: it isn't, by any means, his greatest work—but in view of the fact that it was independently produced in New York, under terrific handicaps of lack of equipment and many of the normal facilities of production, it is highly to Edeson's credit to have done so satisfactory a job. His camerawork is good—and at times very effective. The settings, etc., show excellent production values, and Edeson has made the best of his opportunities, and minimized the many handicaps which are, apparently, inseparable from Eastern production.

"I AM SUZANNE"

Jesse L. asky Production for Fox

Photographed by **Lee Garmes, A.S.C.**

Photographically, as well as dramatically, "I Am Suzanne" gathers interest as it progresses. Commencing with some of Garmes' less inspired work (heightened by a print whose opening reels were rather too light), the film moves into new and unusual surroundings, culminating in sequences of considerable pictorial novelty. As the action progresses into the highly unusual realm of the puppeteers, and is climaxed by the bizarre "inferno" revue, the material offered Cinematographer Garmes grows increasingly novel—while his treatment grows correspondingly. The use of tinted-base stock (of a variety of colors) for the entire length of the film adds immeasurably to the atmospheric value, and, as in Garmes' earlier "Zoo in Budapest," enhances his fine camerawork to a marked extent. And—even as "I Am Suzanne" offers Lilian Harvey her best American opportunities—so, too, does it accord her the best photographic treatment she has received to date.

"FOUR FRIGHTENED PEOPLE"

Cecil B. DeMille Production for Paramount

Photographed by **Karl Struss, A.S.C.**

"Four Frightened People" is a splendid tribute to the versatility of Cinematographer Karl Struss, A.S.C. In some earlier films—like "Sunrise" and "Jekyll and Hyde," for example—Struss has exhibited far more perfect results; but he has never produced a film exhibiting finer workmanship.

"Four Frightened People" was made in Hawaii, amid some of the densest jungles the islands offer. Incredible as it may seem, these jungles prove even more dense and obscure than even the wildest concept of a studio art-director—and, accordingly, they obviously offered only the most impossible photographic conditions. Even with the advantages of Super-Sensitive film, fast lenses, and the inevitable high-powered lighting installation the company must have enjoyed, it is incredible that even Karl Struss could bring back so successful a picture. The great majority of the sequences are enacted in the deep jungle, amid impenetrable shadows complicated by an intricate network of tangled branches. Other scenes are played in deep gulches, amid a profusion of tropical vegetation. The results are little short of marvelous, in view of these unphotogenic conditions; only the most skillful of cinematographers could have achieved such photographic quality—such uniformity, such an impression of naturalness, such well-balanced compositions and lighting. An orchid to Mr. Struss and his crew!

A thundering good parallel. Charles A. Marshall, A.S.C., and Second Cinematographer Reggie Lanning, A.S.C., set up on a parallel improvised from the big 8-inch guns of the U.S.S. "Saratoga."

"THE POOR RICH"

Universal Production

Photographed by **George Robinson, A.S.C.**

Combining broad comedy and dramatic cinematography is a difficult assignment; but Cinematographer Robinson does so very successfully in "The Poor Rich." Had the film been played less obviously for comedy effects, Robinson would undoubtedly have had an extremely pleasing picture, for he had very effective sets and locations to work with: as it is, the film is a tribute to his talent, for he manages to maintain a pleasing atmosphere in spite of the over-emphasis placed on the comedy angle. His skill is particularly noticeable in the handling of the murder sequence, in which ultra-rapid camera movements are accomplished very effectively, though at a tempo which would, with less deft handling, be ruinous.

"MISS FANE'S BABY IS STOLEN"

Paramount Production

Photographed by **A. L. Gilks, A.S.C.**

Quite the best picture Cinematographer Gilks has had in a long time, "Miss Fane's Baby Is Stolen" allows him an unusually wide range of opportunities, which he has utilized expertly. The sets—like the dramatic mood of the story—run a wide gamut, from the luxurious home of the movie-star to the squalid shack of the kidnappers. Gilks has photographed them all excellently, his treatment running an equally wide range, in perfect accord with the dramatic requirements. He has been faced, incidentally, with the task of photographing much highly dramatic action—the sort that usually calls for low-key lightings—upon sets which demanded high-key treatment. He has done this without for a moment losing the required mood—a difficult feat. He also has some exceptionally well-balanced exteriors.

A Fireproof Process Screen

HIGHLIGHTS

Minimizes "Hot Spot" through Polarization.

Photometric Tests said to show difference in illumination which varies but 5 per cent against 65 per cent for ordinary screens.

Hot-Spot control can be balanced to any installation. Composition used eliminates fire-hazard—material will actually put out flames!

by

Arthur Campbell
Cinematographer

UNQUESTIONABLY the outstanding technical development of the past few years has been the universal acceptance of the "Transparency Projection Process" (under several different names), which has to a surprisingly great extent superseded most of the previous forms of composite photography. Reduced to its essentials, this process consists of the projection of any desired background—moving or static—upon a translucent screen erected behind the actors, and the rephotographing of the composite scene by means of cameras electrically synchronized with the background-projector. Granted the application of the proper technique, the results attainable by this process are truly remarkable—often so perfect as to defy detection as composite shots. There are, however, several drawbacks which have not, as yet, been entirely overcome.

The first of these is the so-called "hot spot"—an area in the center of the process screen in which the intensity of illumination is markedly higher than in the rest of the picture. Many different means of eliminating this "hot spot" have been tried, with varying degrees of success; but, with the possible exception of one intricate method which, while theoretically perfect, does not meet the commercial requirements of production, no single method yet tried has achieved complete satisfaction.

The second inherent drawback is the physical nature of the translucent projection-screens used. The earliest attempts utilized sand-blasted glass screens of relatively small size: but as the process developed, requiring larger and yet larger screens, the natural difficulties inherent to large glass sheets became increasingly evident. The factor of expense mounted out of all proportion to the increased size, for the procuring of glass sheets of the proper quality and dimensions (some of the screens were fifteen or eighteen feet wide) became exceedingly difficult. A single screen might cost many thousand dollars; and the sand-blasted surface was not always entirely satisfactory. Moreover, the matter of breakage became a serious problem, not only as an economic factor, but from the viewpoint of safety. At least one man has been maimed for life by accidentally breaking one of these huge glass sheets, which amputated an arm as cleanly as any guillotine.

The next experiments in the evolution of the process screen produced the now popular cellulose screens. These were made of matte-surfaced cellulose nitrate, lashed into a suitable wooden frame. From the standpoints of cost and quality, these screens represented a considerable advance: a much larger screen could be had at a small fraction of the cost of a glass installation. The optical quality of the cellulose product likewise proved superior to that of glass installations, as proven by the fact that virtually all of the major studios' process departments standardized on such installations. The cellulose screens, too, were flexible, and not only were they not subject to the danger of breakage, but they were lighter, so that they could easily and safely be moved from one stage to another, if necessary; and even be rolled like a canvas for storage or shipment. On the other hand, like all forms of cellulose nitrate, they were highly inflammable. On one instance, a fifteen-foot cellulose screen, accidentally ignited, is said to have been consumed in approximately thirty seconds. This characteristic made them a grave potential menace, not only to the physical equipment on the stage, but to the safety of the people working there; especially the electrician operating the overhead lighting, who often works on a scaffolding directly above the process-screen.

A new and improved type of cellulose process screen has recently been developed, however, which promises to minimize, if not, indeed, to entirely eliminate these disadvantages. It is the invention of Benjamin M. Bodde, who has been engaged in this research for a number of years, in cooperation with such experts as Roy Pomeroy, A.S.C., and Farciot Edouart, A.S.C.; the first complete installation of one of Mr. Bodde's screens is now being made in Edouart's department at the Paramount studios.

This screen, which may be made in virtually any size, is composed, not of cellulose nitrate, but of cellulose Acetate, which is virtually non-inflammable. By virtue of the chemical components used by Mr. Bodde in his process, the screen, when heat is applied, will melt, but not burn: the tendency is, in fact, for the melted cellulose to extinguish the fire.

An even more noticeable feature of the new screen is the fact that it can not only be made more highly transmissive than previous types—and entirely without the yellowish cast heretofore an objectionable, but apparently inescapable, feature of cellulose acetates—but it may be treated in such a manner as to materially reduce the objectionable "hot spot." The material from which the screen is made is naturally perfectly transparent, and the matte surface is produced by chemical applications which produce a clear and virtually grainless surface. By varying these applications, the density of any given area may be increased, with the result that "hot spot" can be controlled to a considerable extent.

(Continued on Page 424)

Coming: A Fourth Year of

ACHIEVEMENT

SINCE Eastman Super-sensitive Panchromatic Negative was introduced early in 1931, its revolutionary qualities have fulfilled every hope and prediction of its sponsors. It has helped cameramen and producers so tremendously . . . it has affected the motion picture art so profoundly . . . it has contributed to so many cinematic triumphs, that a further prediction can now be made: In its fourth year, as heretofore, this Eastman film will be an important factor in the most conspicuous motion picture achievements. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-sensitive Panchromatic Negative*

TREND of THE TIMES

9½mm Color Film

• In Japan one of the ingenious amateurs has developed a color system for himself with the use of 9½mm. film. His method is based on the alternate red and green frames. However, instead of coloring the film on which the exposure is taken he has made a filter for himself from a leader which he has colored red and green alternately. This filter is made up of an endless loop which permits him to use a minimum amount of filter film. This filter is used in both camera and projector.

Cellophane Flash Bulb

• According to the Amateur Cinema, a publication of Tokio, Japan, a scientist of that country has invented a Cellophane flash bulb. This new type of flashlight is called Senko-ban and is said to be very similar to other types of tinfoil flashbulbs with the exception that the glass bulb has been replaced by a double bag of cellophane which makes it non-breakable.

Page Mr. Ripley

• According to recent research France granted a patent to an American by the name of Horner in the year 1833 for his invention of the Zootrope. This seems to be the earliest ancestor of motion pictures. The patent was granted to Horner for a device that created the illusion of motion pictures by rapidly showing a series of images that varied slightly in composition.

Beach Theatre

• A small motion picture theatre in Paris has turned its auditorium into an artificial beach. This is equipped with plenty of sand from the seashore in which the kiddies can play while the mothers and nurses watch the pictures on the screen in comfortable modern beach chairs. The theatre reports unusual business on rainy days.

Midget Camera

•According to news dispatches from France a manufacturer of that country has placed a camera on the market of the size of a cigarette lighter. This takes eight exposures of 35mm film. The camera sells for about two dollars.

Mirror-Lens Tele-Optic

• A detailed report of the latest progress made in the development of tele-photo lenses is given in Kino Technik describing the "Mirror-Lens Tele-Optic" built by the Askania-Werke A. G. Berlin.

Its advantage over former tele-photo systems is mainly a considerable reduction in size and weight. This has been accomplished by applying a principle, new

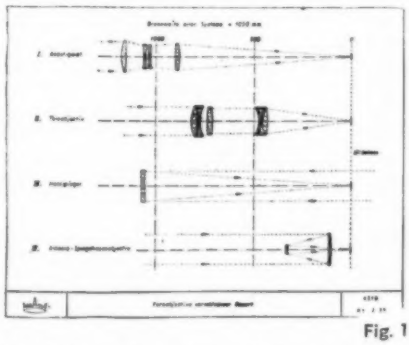


Fig. 1

to photography—that of the reflecting telescope.

The light falls first upon a mirror from where it is reflected backwards onto a second mirror which finally projects the rays in the original direction onto the light sensitive material.

The first mirror is made of glass, the back of which is silvered. The second mirror consists of two lenses either cemented or uncemented. Thus this system provides eight to ten surfaces for optical correction which of course is a significant advantage.

The length and the weight of this latest model is only one-fifth of that of those used formerly. Moreover, the

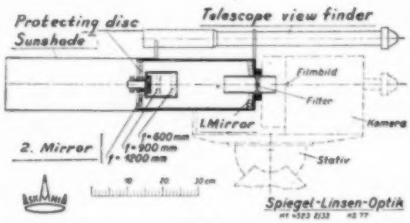


Abb. 2

Fig. 2

weight center is falling together with the placement of the front piece of the camera. Therefore this optical system can be used successfully in connection with motion picture cameras without any difficulty.

Figure one shows a sketch of this latest type in comparison to prior models while figure two gives an illustration of the construction of the tele-Mirro lens.

Multiple Exposures

• The Kino Amateur published an interesting article dealing with a new process invented by R. Thun which makes it possible to expose and project on twenty-one feet of 35mm film as many pictures as one could obtain in normal cinematography by using 1020 feet. An accurate description as to how this is accomplished by means of a special optical system and film moving mechanism for both the camera and the projector is aided by several illustrations.

Although this process is still far from practical perfection it should create considerable interest in its future possibilities.

Synthetic Sound Script

• In Film Technik of Berlin reference is made to the different inventors and their work in connection with the progress achieved in the technique of writing or painting sound records which later are reproduced through a regular projector. The latest step seems to have come from England, making known the name of E. A. Humphriss, who claims to be able to imitate sound recordings of spoken words by writing the sound track.

The paper points to the many future possibilities which may be seen in the practical application of this process; for foreign versions or recorded languages and also in the medical field.

Photography Without Camera

• "The Camera," a photographic publication of Switzerland, tells of an interesting process which they term "photography without a camera."

The method pursued consists of drawing designs on the sensitized paper in the dark room, employing colors of different transparent degrees from opaque to a high transparency. After the design is placed on the sensitized photographic paper it is then developed in the regular way. The artistic quality of these experiments will depend wholly upon the ability of the artist.

Photo by John Cooper, A.S.C.

AMATEUR SECTION

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• PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

Next Month . . .

• A mighty fine article telling you how to secure effects and some fine corrections of your shots on the Projector itself This one will intrigue the mechanical minded amateur.

• Another Article on Interior Lighting by Arthur Campbell, the professional cameraman who has worked in studios the world over.

• Adding music to your projection adds interest for your audience. How, what and when to use it will be discussed.

• Other articles will touch on technical and production phases of amateur pictures.

Table-Top Sequences

by

Paul H. Allen, A.S.C.

Twigs and branches to represent trees and bushes give the impression of the animals being their natural size when the eye compares the two. Note size of ostrich and the bush in front of it.

DID you ever hear of table-top photography? It has given still photographers pleasure for years—and it's just as interesting in cine work, too. Here's the general idea behind it: unless you've got something in your picture which will serve as a definite "yardstick," a photograph doesn't necessarily give a true idea of the size of anything. Have you noticed how the best makers of scenic films always have a man—or an auto—or a train—in the picture when they want to show the size of something? Well, the reverse is true, too: if you haven't such a yardstick, you can photograph almost anything in a way that will give a most deceptive idea of its size. So, if you take a shot of a doll or a toy, against a setting that gives no means of gauging its real size, your audience will jump to the conclusion that it's life-size.

For instance, consider little Willie's Christmas train. You can make some interesting films of it if you want to. Here's how: lay out your track as you wish; put up whatever accessories you may have, such as stations, signals, bridges, etc. Grass can be simulated by the "grass cloth" used for indoor golf, or sometimes by rough-surfaced, green cardboard or wallboard. Trees and shrubbery may be made by properly shaped twigs, glued in place, while a little sand or gravel here and there—especially along the tracks—adds to the natural effect. Toy buildings of the right size will help, too (you can do a lot with the building-block and cement-making sets now on the market)—and the smaller buildings, fences, etc., can be used in the "distance." For a background, a white sheet can often be used: if you photograph the scene from the right angle, it will give a very good imitation of one of those white, "bald-headed" skies you get with Ortho film on a cloudless, hazy day.

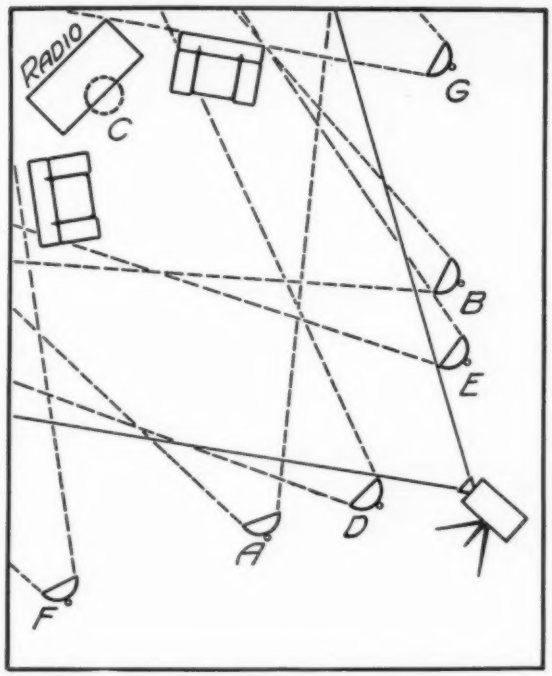
Now for the lighting! Probably the best thing to do is to have most of your light from overhead: it looks more natural if it comes from above, and at a slight angle, for we are accustomed to seeing the sunlight behave that way. You can use regular photo lighting units, or photofloods in a reflector, depending on what you have at hand, and what happens to be best for your set-up.

Now to make the picture! The best camera-angle depends, of course, a good deal upon the skill you've used in making your miniature set. As a rule, the most effective for most purposes is what would be approximately eye-level in a real shot; that is, a few inches above the "ground level" of your scene. If you have a camera with slow-motion speeds, about 36 or 48 speed would be best, depending on the speed your train moves at: the slow-motion not only slows the motion down, but smooths it out, and makes it appear more natural. This work is best done in a series of short scenes.

If you're one of those really advanced filmers who likes to play around with trick effects, why not have some fun putting little Willie at the throttle of his toy train? If you've a camera like the Cine Kodak Special it can be done. You begin with a close shot of the engine-cab: the engine is really stationary, but behind it you revolve a panoramic still-picture on rollers, or on a large drum. This—properly done, of course—will make it seem as though the engine were moving. (A side view is best). Inside the cab window, you put a square of black velvet, arranged so that no light strikes the velvet, and so that its edges are concealed. Make your scene. Now wind the film back to the starting-point. Take Willie, and put him behind a black-velvet drop with a hole cut in it which corresponds in shape with the window in the engine-cab. Line up this shot so that the image of Willie is the right size to fit in the matted-off part of the previous shot. Then light him properly—preferably so that the black drop is not illuminated—and make your second exposure. Where the film was matted off before, by the tiny black square, Willie's image will be photographed, while the rest of the picture will be matted off by the big black drop—and the image of the engine will show. If your matting is accurate, the developed picture will show Willie driving his own toy engine! Cut into the other shots of the train, it will give you a film that will thrill Willie and his friends.

But suppose Willie is younger—or maybe a girl! Well, animated dolls are another table-top subject. Again, you arrange a setting of the proper size—if small Susie has a doll's house, you can use it for your studio (you can put a still a few inches behind any windows, and get a remarkable effect)—or you can build your own, with toy furniture, a few cardboard walls, etc. Or you can make a little exterior set, like the one in the picture. Obviously, though, you can't photograph the doll in actual motion, either at normal or slow-motion speeds! But—you can move them! But, once more, reverse your rule; instead of taking pictures fast, to slow things down, take them slowly—very slowly—to speed them up. Take them one from at a time (there are several 16mm cameras that can do this—among

(Continued on Page 421)



Lights F and G are added to the backlighting to kill shadows of chairs that the addition of D and E would create.

There Must Be A Reason For Every Light

by

Arthur Campbell,
Cinematographer

STILL adhering to basic lighting, but assuming that your characters are going to move about in the set, we find that the set will need additional light—but these lights must have a reason.

In last month's article on the A B C of Set Lighting we started with three lights indicated on the sketch this week as A B and C. It was explained that A and B were used for cross lighting the people and the furniture, with C an overhead light acting as a back light.

Four additional lamps have been added to the set; as we now assume that the characters are going to move about.

In view of the fact that we merely had our characters occupying the chairs, lights A and B were so trained on them that they lit them properly while sitting down. If these people arise the lower portion of their bodies will be well lighted, while the upper portion will be receiving only the fringe of the light from A and B. C, however, will still be performing its function whether they stand or occupy the chairs.

The fact that they will stand compels us to add lights D and E. However, these lights we focus at a higher point, so they will light the upper portion of the body of the actors.

Also by reason of the fact that the people will walk about it may be necessary to move the camera back; this means moving the lights back. The further we move a light from the subject the less light is thrown on that subject, so more lights must be added to make up for the weakness of the light caused by moving it back. So the addition of these two lights serve two purposes: they properly light the upper portion of the body and they furnish the additional light necessary, as we have increased the range of the camera by moving it back and placing the character a further distance from the light.

In addition to these two lights we have also furnished more back lighting, represented by lights F and G. Note that these lights do not touch any of the furniture nor any of the characters. They are trained on the walls exclusively. This will not only help to light up the walls because of the wider range, but the reflection they will throw from the walls will also help to give you additional back lighting. You can readily understand that two lights will be needed in order to properly balance the light on both walls with a set such as this. Should we have added another light overhead it would have had to be trained on the walls and it would have been difficult to make it spread its beam evenly over both walls. It is for this reason this type of set-up calls for two additional lights.

If your set-up is such that it has only one wall as a background you might accomplish this same result with one light, providing of course you are not covering too great an expanse of wall; then you will have to place a light on each side so as to give even lighting throughout the entire background.

When you analyze this whole set-up you will realize that we are still adhering to the A B C of lighting. We have added a light on the left, another light on the right to intensify and complete our cross lighting and added two additional lights in the rear for back-lighting.

Now your characters can move around, you can go into action, and no matter what their location might be in the set they will be properly lighted. Not only that but your props, such as chairs and radio, will stand out from the walls because of the back-lighting.

Your highlights will not be killed; you will have a good balance, as the lights from each side will balance the shadows from the opposite side.

The beginner is inclined to overlook this important phase of lighting and his pictures invariably come out very flat, as he has placed his lights to give even distribution on both sides of the face.

A senseless set-up of lights will create shadows that will distract the attention of your audience. And it is for this reason also that the two additional back-lights had to be used. We have increased the front illumination with lights D and E, which would have a tendency to throw shadows on the walls from the two chairs. We eliminate these shadows by the use of the lights F and G.

So you see there is a reason for everyone of these lights. None of them has been added to secure any increased effct or bauty. They were added because they were needed.

The basic lighting mentioned last month and in the early part of this article may be compared with the sketch of the

(Continued on Page 422)

At top, enlarged frame from 16mm picture showing exposure of title over scene. At bottom, another enlargement of 16mm frame showing the use of mask, and the results given on screen.

How I Made "Life"

by

Harold B. Hutchings,
Winner of Cold Medal for "Home Movie" in 1933 Amateur Contest.

FOR over seven years I have made the usual snapshots of my oldest boy "Bob"—Christmas, Birthday, Fourth of July, Hallowe'en and various other events. After viewing the 1932 prize pictures of the AMERICAN CINEMATOGRAPHER I began to want to create something which would tell a lasting story in film of a "day in his life." Naturally this would start with the break of day. I thought I would like to show the sun rising . . . the birds awakening . . . the rooster crowing . . . the milk and daily paper delivery . . . in that dull, misty early-morning tone. I succeeded fairly well with the bird shot secured at 5 a.m. with a 3½ inch lens from our bedroom window, but the tone value did not match the sunrise shot (the laboratory could not know what I wanted anyway). I neve rgot my rooster to crow. After wasting quite a bit of film and patience, I started all over again. I believe this was the best decision I have ever made.

In setting an outside limit of 300 feet for my finished picture including titles, I knew I must get started right out with my boy. I double-exposed the paper and milk delivery into the lead titles . . . three quick dissolves succeeded in getting my wife out of bed to light the stove. Then I faded in on Bob's foot extended from the side of his bed—as I had so often seen it—and panned up to a yawning, stretching boy—collecting his thoughts for what was ahead of him that day. At this point I decided on some double exposure which would take him quickly through some of his daily play. I figured this would snap the picture up and also save considerable footage. These shots are really very easy to make with any camera having an accurate footage indicator. Using an inexpensive sunshade and filter holder (the kind that clamps on to the lens) I cut out two masks from black photographic paper, which, when fitted over the sunshade, would cut my picture diagonally in two parts. The diagonal edge was roughly cut (like teeth in a saw) to keep away from the effect of a sharp line between the two exposures.

However, it was found that in photographing outdoor scenes the use of a neutral density filter was also necessary to completely kill this sharp line. A filter heavy enough to give a stop of 5.6 or 6.3 reading should be employed. By the way, this same filter is just right for making outdoor lap dissolves with cameras which do not have an adjustable shutter—where the iris diaphragm on the lens is used. Practically any scene where a 4.5 to 5.6 stop is used can be blacked out when turned down to F16. This filter will not change your values in the least.

In case you do not know, a dissolve is really the lapping of a fade-out with a fade-in. This, however, when developed, will show no changing in exposure on the screen as the lapping or double exposure of the two scenes will produce a normal even exposure on the finished film. If you do not completely fade out your scene, you will get a very unpleasant effect of the dissolved scene "jumping abruptly off the screen."

The mask which covered the upper left corner of my picture was then fitted to the sun shade with a little "scotch tape," and after mounting my camera on a tripod and lining "Bob" up squarely in the lower right part of the viewfinder I was ready to shoot just 18 feet as he reclined in bed with his hands folded back of his head and eyes closed. At 18 feet on the gauge I told "Bib" to smile, open his eyes and look up toward the left hand corner of the picture (where his dreams would appear). My only reason for shooting this part of the double first was that I had determined to use only 20 feet of film and I would make my dream pictures fit to this footage. Not knowing how long it would take for each scene I could cut one out or add one just so long as I saved my fishing picture for that last two feet.

Of course, the next operation was to place my hand over the lens and run the balance of the film through the camera, rewind in a dark room and then again thread the film into the camera. Right here is where I employed to good advantage a trick I had previously learned to obviate, the taking of wanted scenes on leader strips. Remove the lens and run the camera down to the end of the leader strip, or,

(Continued on Page 420)

Filming The Music Lesson

by

Karl Hale

ONE of our good friends who reads many and sundry languages popped this continuity on our desk which he translated from the Kino Amateur, a publication of Germany. It struck us as smart, having a fine continuity and conceived by a man who knows production value and has imagination.

While it is built around the piano and the lesson given a youngster by the piano teacher, it can be converted to practically any musical instrument and a good picture made from the idea. Notice the interesting detail the author has conceived. This detail does not necessarily have to do with the piano and the lesson, but gives the reaction of what is going on at the piano through the medium of the action of the maid, the dog, the bird. If you haven't these animals in the house, substitute them with those you have or even the milkman's horse standing at the curb. Show him jerking his head up at the discord.

This author made a fine observation at the beginning of his article when he stated "A title is good, a good scene is better." You will perceive when you have read the continuity that only the main title will be necessary.

Scene 1. Shows a door bell with a name card above it. A man's hand comes into the picture and rings the bell.

Scene 2. Door opens from the interior and the man enters.

Scene 3. He is greeted by little girl, hand and hand they go toward arch or doorway.

Scene 4. Here you can cut down to their feet, showing them walking so as to establish professor's shoes.

Scene 5. You pan up as they walk and show them walking toward piano, holding long shot until little girl sits down.

Scene 6. Side view of piano as little girl opens piano and professor sits on bench alongside of her.

Scene 7. Place camera at back of the pair at piano and have professor open music score.

Scene 8. Set camera to side where girl sits, as she is smaller than the professor, and camera will take in both of them. Professor starts beating time with hand and at the final down stroke girl starts playing.

Scene 9. Show close-up of girl's hand playing.

Scene 10. Close-up of professor's foot beating time.

Scene 11. Close-up of his hand beating time, with time getting slower and slower.

Scene 12. Backing up for quarter shot of same action with professor's head inclining closer toward girl's hands. Beat stops. He picks hands from piano.

Scene 13. Close-up of girl's hand in professor's, showing little girl's hand dirty.

Scene 14. Back up to quarter shot again. Showing professor scolding girl and sending her off to wash hands.

Scene 15. Swing around to that side of piano which will let camera face door through which professor and girl came. Show girl shamefully leaving piano, walking out of room.

Scene 16. Next close-up of hands in a wash-basin busily scrubbing.

Scene 17. Close-up of tap running and soap bubbles in basin. Fade out.

Scene 18. Girl back at piano starting to play.

Scene 19. Show professor's foot tapping—and coming to a stop on the floor in a definite determined manner.

Scene 20. Back to side quarter shot of teacher making a grimance. Reaches over for hands of girl and places them on other keys. Hold this scene and she plays again. Professor puts hands to ears.

Scene 21. Close-up of dog howling.

Scene 22. Close-up of maid peeling potatoes, dropping knife and holding her ears.

Scene 23. Close-up of canary bird in cage fluttering around.

Scene 24. Angry face of teacher.

Scene 25. Close-up of hands again. Teacher's hands grip girl's hands and places them on right keys.

Scene 26. Close-up of little girl's face almost ready to cry—or with tears running down cheeks, if you prefer.

Scene 27. Teacher explains where her hands are to go on keys—gets interested in the piece, starts playing with gusto himself. Little girl starts sliding off bench.

Scene 28. Little girl leaving room.

Scene 29. Professor back at piano playing, body swaying, oblivious of everything around him.

Scene 30. Flash to bird in cage singing.

Scene 31. Show rear of dog with tail wagging.

Scene 32. Short flash of maid singing, smiling and holding her head in time with the music.

(Continued on Page 420)

ARTISTRY

Making Better Titles

by

William Stull, A.S.C.

PROBABLY the outstanding technical weakness seen in the majority of the films entered in the 1933 American Cinematographer Contest was the photographic quality of the amateur-made titles. Excepting, of course, the films with commercially-made titles, nine out of every ten entries seemed deficient in this respect. Although the titles might be lettered and photographed well enough, the development was usually such that the result on the screen was not wholly satisfactory. It must be remembered that the development of title-film should be planned to attain an entirely different result than that of picture-film, negative or positive. In developing for the picture, softness and delicate gradation is the goal; in developing titles, the extreme of contrast between the black background and the white letters should be sought. Therefore, while the basic methods of development are the same in both instances, the actual developing solutions are very different.

The actual photographing of the titles is a relatively easy matter. There are a number of title-boards available, made by the manufacturers of the various cameras, and designed to get the best results in the simplest manner. Therefore, the use of such a "title-maker" is strongly to be recommended, since—no matter what type of camera one uses—there is available a title-stand expressly designed for use with that particular camera. If, however, you prefer to make your own title-board, that, too, is relatively simple. The essential requirements are: a rigid support for the camera (preferably such that the distance from lens to title-board may be altered, to take in different fields); a rigid support—usually a board—for the title-cards; and a source or sources of illumination which will illuminate the entire field, strongly and evenly. Photoflood bulbs in suitable reflectors are probably the best for this, though lower-powered lamps can be used. Obviously, it is highly important that the title-card be properly centered in the picture, and that the focus be accurate.

Mr. Edward J. Schon, whose unusually well titled picture was one of the Certificate-winning entries in the 1932 Contest, described his own title-board, which is very well adapted to all the requirements of the amateur. "I simply rigged up a board, with holes drilled every two inches along its length, and centered, so that I could screw the camera (a 'Filmo') at different distances from the copy-board, which is screwed on the end of the base-board, at right angles. I use an ordinary, universal-focus, f:3.5 lens, though, of course, the focusing models would be more convenient. Focusing is accomplished by unscrewing the lens from a half to one and a half turns according to the size of the title. The exact distances and focusing for each size of title was predetermined by inserting a ground film in the gate of the camera and focusing visually. I keep all this data tabulated, and written down on the base-board."

The simplest way to make titles is, of course, to use white paper, with black lettering: this lettering may be done by hand—if you are good at lettering—or on a typewriter. If you use the latter method, it is better to use a good, clear carbon-copy, made with a fresh carbon, rather than directly-typed cards; the lettering is clearer, and photographs much better. Some machines have unusually large type; the "Vogue" type available on many of the newer machines is also very good for titles: it resembles the type used in this magazine, and is much more distinctive than the style ordinarily used in typewriters.

The matter of exposure must, of course, depend upon the light used, and the area of the title-card. As in anything else, the smaller the stop that can be used, the better; as positive film is used for title-work, it is naturally considerably slower than Pan or Super-Pan—especially in the yellower light of incandescent lamps. However, with two Photofloods, and a card approximately three inches wide, f:3.5 or lower may usually be used. The best method, of course, is to use an accurate exposure-meter, or else to determine the proper exposure by actual tests. A full exposure is desirable.

Once photographed, titles may be developed in almost any method one would use for a normal film. If one wants to make long rolls of titles—fifty or a hundred feet—the regular Stinemann and Correx tank systems are of course ideal. For shorter lengths, pin-racks can be made to fit into small trays, or the Leica glass developing drums may be used. The principal thing, of course, is to get a clean, uniform development, and to sarry it as far as possible. With some solutions, the whites tend to grey over on prolonged development; so the maximum development which will give clear whites and solid, opaque blacks must be determined.

Although there are quite a number of suitable developers available, probably the two best are the Eastman "D-11" positive developer formula, and the formula used by Mr. Schon, which this writer regards as one of the best—if not the best—so far tried for this purpose. It is adapted from a formula used for developing an engraver's plates, and gives some of the most lustrous blacks I have ever seen. The developer is compounded from two stock solutions:

SOLUTION 1

Sodium Bisulphite	¾ oz.
Hydroquinone	¾ oz.
Potassium Bromide	¾ oz.
Water to	32 oz.

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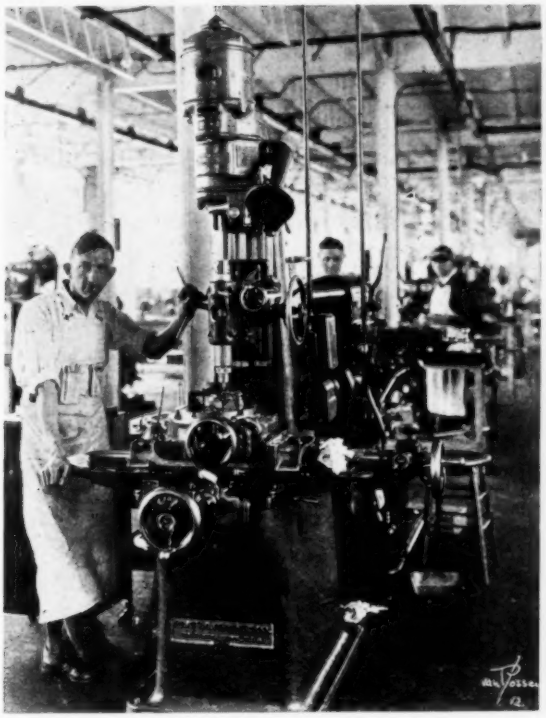
Film Your Business!

by

Frank B. Good, A.S.C.



YOUR business is none of my business ,I'll admit—but the chances are ten to one that there's a good amateur movie hidden away in it. Maybe it's become just another six-days-a-week grind to you—as dull as ditch-water; but, well, I've seen interesting pictures made about even ditchwater! Remember that the principal thing to hold in mind when you're making a picture is to choose an interesting subject; and what seems insufferably dull to you—who are so close to it—may be new and tremendously interesting to the other fellow.

Some of the most interesting films entered in the American Cinematographer's Amateur Movie Contests, both in 1932 and 1933, were films in which the maker picturized his own daily work. I had the privilege of being a member of the judging committees on both of these competitions; and it was, let me say, a privilege in every sense of the word, despite the hard work it entailed.

In the 1932 Contest, a First Class "Certificate of Award" was deservedly won by Mr. Edward J. Schon, of Portland, Oregon, for his film "The Art of Photoengraving." Mr. Schon is a photoengraver by profession—and there are few professions which make greater demands on the time and patience of their practitioners. You might think that Schon would have been glad to forget his business when he went a-filming—but instead he realized that the processes by which halftone "cuts" are made from drawings and photographs are a deep mystery to most people. And what is more intriguing to either an audience or an individual, than peeping under the shrouding curtains of such a mystery?

So Mr. Schon took his 16mm camera to the office, and kept it there. Whenever his regular work permitted, he would photograph a scene or a sequence, which would fit into a carefully-planned pattern, so that, eventually, his film would be complete. Wisely, Mr. Schon began with a clear mental concept of the story his film must tell: How a Cut Is Made. There is an old Chinese proverb which says, "One Seeing is worth a thousand Sayings"; accordingly, the obvious thing to do was to make the film trace the course of an illustration from the time the picture entered the shop, through all of the various processes of photographing, developing, etching, routing, mounting, etc., until the finished cut is delivered to the customer. Necessarily, the film was long (4 reels, 16mm), for there was a great deal of detail to be shown; but it was interesting—I am sure none of the Contest judges begrudged a minute of the time spent in viewing it. And it must have been equally interesting to other people, for Mr. Schon writes that the film has been shown to service clubs, trade organizations and schools from San Diego to Boston.

In the 1933 Contest there were more films of this type: two of them received Honorable Mention—and came within the proverbial hair's breadth of being Medal Winners. The first of these was "Ry-Lock," a most unusual subject produced by E. G. Thompson, of Oakland, California. Apparently, Mr. Thompson is either connected with a lock manufactory, or in a position to know a great deal about this work through friends or relatives in the business. At any rate, he combined cinephotography and lockmaking to produce an usually interesting film of considerable pictorial merit. He took the making of a lock as his subject, and followed its evolution from the raw materials and blueprint through all of the processes of manufacture and assembly, up to the finished product, inserted in a door and ready for use. His technique differed from that normally employed in that he told his story almost exclusively in close-ups. There were close shots of the different turning, grinding, shaping and painting operations, followed by even closer shots of assembly, and of the operation of the various components of the lock. The longest shot in the film—the only long-shot that I remember—was of a hand taking a brass rod from its place in the stock-room. Nowhere in the film did the human element intrude; it was strictly the story of a lock, and the scenes concentrated the attention upon the lock and its components, with only the hands and fingers of the lockmakers—sometimes, only a screw-driver or a pair of tweezers. The lighting was highly pictorial; nearly all of it was done with a single spotlight. Obviously, the pictorial possibilities of extreme close-ups of a turning-lathe, a grinding-wheel, and similar machines are great; and Mr. Thompson used them to their fullest extent. Moreover, he told his story so perfectly that no titles were necessary; there was, in fact, but a single title in the entire film—the Main Title, which was made by animating a handful of keys which formed the word "Ry-Lock." Mr. Thompson undoubtedly has had success similar to Mr. Schon's—and, I know that all of us on the judging committee found it intensely interesting. We use locks every day of our life—but we had none of us realized how interesting their making could be!

Quite a different cinematic style was used by Dr. A. C. Baxter of the Illinois Public Health Service in his two-reel

(Continued on Page 423)

Contest Will Close End Of October For 1934

The American Cinematographer Amateur motion picture contest will become an annual event.

The fine representation in the past two years has encouraged the American Society of Cinematographers to conduct it as an annual event.

Reaching practically into every civilized country, as it does, it is considered the prime International contest for amateurs and is representative of a cross section of the work of all amateurs.

The last day in October of each year has been set for the closing date of this contest. This means that the film must be received in the offices of the American Cinematographer in Hollywood not later than the last day of October.

Plans are being developed for a wider and more significant recognition for the prize winners. The Medal which was established this year will be the basis of the awards. It is felt that this recognition is the greatest honor that can be bestowed upon an amateur, coming as it does from the greatest body of motion picture cameramen in the world.

Great satisfaction throughout the industry and by the amateurs themselves was expressed in the classifications used in this year's judging, as it permitted of a wider recognition than merely the choosing of pictures in their order of importance regardless of subject matter.

Dr. McAfee Tries Sound

• In recognition of his clinical motion picture work, the dental association of New Orleans recently tendered S. H. McAfee, D.D.S., a testimonial dinner and presented him with a complete and elaborate public address outfit so that he could give a lecture through a loud speaker system during the showing of his pictures. This outfit consists of loud speaker, microphone, electric playing and recording phonograph together with all of their controls. These are built in two portable cases.

"With this," remarks Dr. McAfee, "I become the whole works—cinematographer, projectionist, sound technician, title speaker, lecturer, 'neverthing."

S. D. Childs Wins Paris Prize

• S. D. Childs, who was given third prize in the 1932 AMERICAN CINEMATOGRAPHER AMATEUR CONTEST for his picture "I'd Be Delighted To," was awarded first honors for the same picture in the Paris competition in their "General" classification.

It will be remembered that the story in this picture was old in its entirety with feet and hands.

San Francisco Elects Officers

• At the December meeting of the Cinema Club of San Francisco the following officers were elected to serve during the year 1934: President, K. G. Stephens; Vice President, Arthur Holton; Secretary, Dr. H. P. Kauffman; Treasurer, F. W. Macondray, and Board of Directors, Messrs. G. A. Young, E. A. Breyman and Gordon Michie.

An "Odd Shot" contest was held at this meeting. These were pictures constructed from members' accumulations of unrelated odd shots and were judged on the basis of the best picture that could be assembled from this type of material. Three prizes were awarded, first to Art Holton for "The Life of Prof. Zilch," second to Gordon Michie for "A Trip to Ensenada" and third to Fred Kolb for "The Magic Carpet."

Portland Club Has Library

• One of the features of the Portland Cine Club is the library of 16mm film which that organization maintains for its members. They have just added what they term their "Oregon Film," a club film made up from the best shots of its members of scenes and activities in the State of Oregon.

At their meeting on January 26th the feature of the evening was the showing of color films. Also at this meeting directors for the ensuing year were elected.

Ells Shares Honor

• Fred C. Ells, who was awarded the gold medal for Educational pictures for his subject "Rice" made in Korea, wishes to share the honor extended him with Mrs. Ells, who in the words of Ells: "Stood by loyally, helped feithfully and finally insisted that the film be submitted in the competition."

Ells believed that the source of inspiration deserved some recognition, so two dozen carnations was his form of tribute and acknowledgment.

Victor Sound Demonstrated

• The new Victor Animatograph projector of sound on 16mm film will be demonstrated at the February meeting to the members of the Los Angeles Cine Club.

The meeting will be held on Feb. 13 at the Hollywood Citizen-News Auditorium. The Hollywood Citizen store under the direction of Ray Sebastian will furnish the projectors and mechanical equipment.

Crennan's Special Finder

• Ollie V. Crennan, of New Rochelle, N. Y., is particular about finders on his cine cameras. Several months ago we published a reproduction of a special finder he had made by C. P. Goerz Company. It is adjustable for parallel, with distance markings on the rear from four feet to infinity. It is only necessary to set finder to correspond to distance engraved on taking lens and set field opening to correspond to lens being used. He claims the field of the view finder is adjustable to accommodate lenses of from one to four inches in focal length and is very accurate.

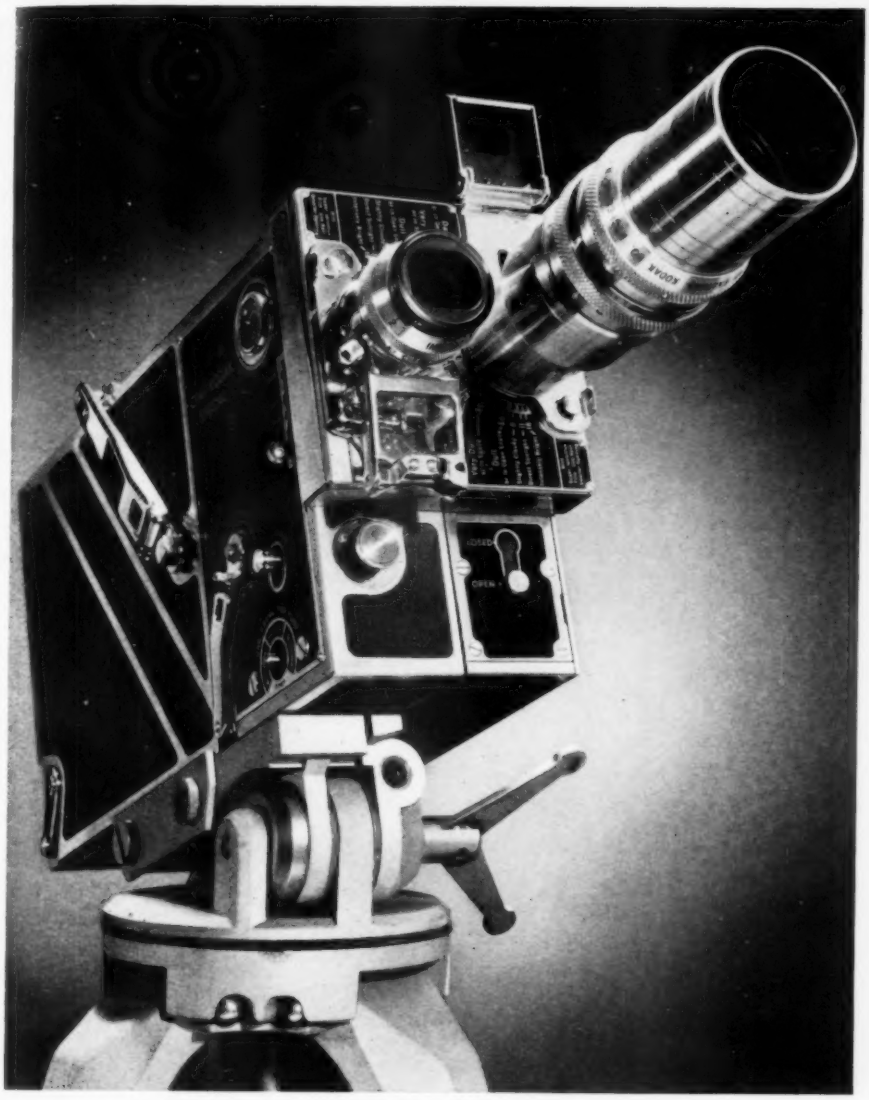
Professionals To Address Cine Club

• Members of the Los Angeles Cine Club will be addressed by professional cinematographers of Hollywood at the February meeting which will be held on the 13th of that month. The meeting will be sponsored by THE AMERICAN CINEMATOGRAPHER and the professional side of the program arranged by the magazine.

Outdoor photography will be the subject with Dan Clark, A.S.C., who was the chief cinematographer on all the Tox Mix pictures, speaking on composition and outdoor lighting to demonstrate to the Amateur what to concentrate on and how to read light. Cinematographer Clark will make some special 16mm subjects to illustrate his talk.

Ray Fernstrom, a newsreel man of renown, will tell what and how to get the news. What constitutes news and how to find the dramatic highlights of news.

Composition will be explained from the artist's standpoint by Randolph B. Clardy, winner of gold medal in 1933 for his 8mm picture, "Cattle Country."



The most capable of all 16 mm. Movie Cameras

You get professional scope at amateur cost with Ciné-Kodak Special, the 16 mm. camera built and equipped to studio standards.

DOUBLE exposures...dissolves...fades...mask shots...slow motion—they're all within the Special's scope. For this remarkable 16 mm. camera has a full complement of accessories that includes many devices you previously found on 35 mm. studio cameras only.

Ciné-Kodak Special has a variable shutter; two hand cranking shafts—eight-frame and single-frame—as well as a spring motor drive; a reflex finder for ground-glass focusing with all lenses; interchangeable 100-foot and 200-foot film chambers; mask slot between lens and film; double lens turret for six interchangeable lenses.

A Custom-Built Camera

The basic model, equipped with *f*.1.9 lens, set of six masks and one 100-foot film chamber, is priced at $375. Special adaptations of this model or additional equipment furnished to order. Write for the abundantly illustrated Ciné-Kodak Special Book.

You can make a scene such as this with the Special by double exposure, and animation filming with the single frame release button. First exposure of the girl against a dark background... wind back the film... then single frame exposures of the toys.

Circle, oval, and two vertical and two horizontal half masks are supplied with the Special. Masks of heart, keyhole and other designs may be ordered. To use them you merely slip the mask in a slot between lens and film.

If it isn't an Eastman, it isn't a Kodak

Eastman Kodak Company, ***Rochester New York***

WHEELS OF INDUSTRY

Synchronized Photo-Flash Lamp

• A small, practical Synchronized Flash Lamp device which attaches directly to the Leica camera without requiring adjustments or alterations of any kind is announced by E. Leitz Company. This device consists of a polished metal tube which slides into the clip found on every Leica camera, a reflector, and connection for camera release button. The batteries are contained in the metal tube, and the reflector, being made of heavy paper, silver-foil lined, folds so as to be compact. Two receptacles are provided, one for the standard Photo-Flash Lamp and the other for the miniature bulb which is supplied with the outfit for testing the power of the batteries and synchronization.

As the shutter release button is pressed, the flash is fired.

Leica Lens Booklet

• E. Leitz, Inc., has issued a booklet giving information about the eleven different Leica lenses. The booklet is written in the conversational style of a discussion between a Leica owner and the owner of a larger camera. This booklet No. 1220 will be sent without cost upon request to E. Leitz, Inc.

Solite Sunshade and Filter Holder

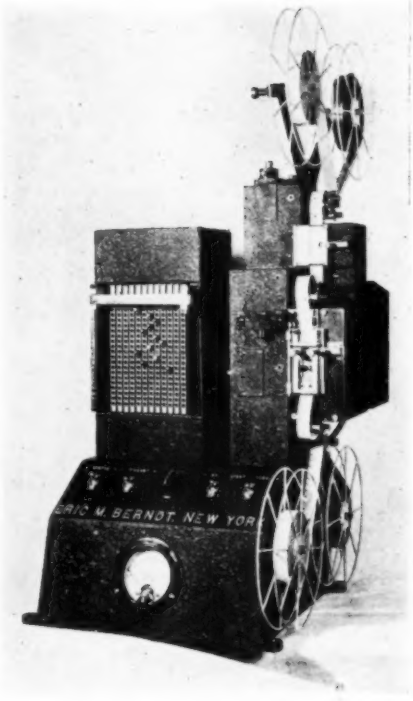
• Solite Sales Co., Inc., of New York, well-known manufacturers of lighting units, announce a sunshade and filter holder under the trade name of the Contra Light Sunshade and Filter Holder. This is especially designed for the Leica camera and is claimed to fit all Leica lenses excepting Hektor 73mm F:1.9 and 105mm F:6.3.

This is made up of four units consisting of the filter holder, glass filter, filter cap and contra light sunshade cap.

16mm Sound and Picture Printer

• Eric M. Berndt, the well-known manufacturer of special 16mm cameras for both silent and sound pictures, announces a companion to this equipment in the nature of a combination 16mm scund and picture printer.

With the strides being made by 16mm sound on film, this printer reaches the market at a timely period. It is claimed



to have thirteen outstanding features, among which are:

1. Bench type printer, strongly built of cast aluminum and weighs only about 45 lbs.
2. Capacity 400 feet and machine prints 25 feet per minute but can be stepped up if necessary.
3. All wiring and motors and take-up belts are enclosed.
4. Sound is printed continuously while picture is printed intermittently.
5. Apertures made of stainless steel.
6. Picture gate is of relieving type which applies tension during exposure and releases when film is in motion.
7. The intermittent consists of a steady cam movement hardened and ground using two claws, one above the other.
8. Breaker Box and automatic light change included.
9. The printer is so designed that the lamp house can be easily removed and a 16mm or a 35mm head can be added to convert it into an optical printer.
10. It operates entirely on 110 volt a.c. except the printer lamp which operates on 6 volt battery.
11. The meter in front indicates the exposure on the sound track.
12. The machine is available with either take-up reels or flanges.
13. All electrical connections are in the rear, and controls in front of the machine.

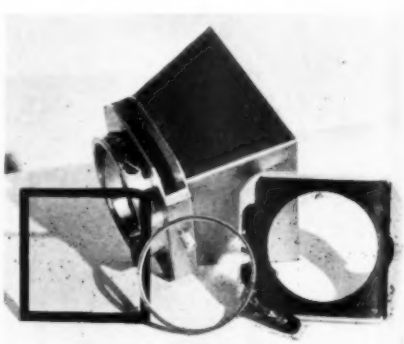
Bass Bargaingram

• The Bass Camera Company has issued its January Bargaingram of 16mm equipment. This consists of a 20-page listing of material useful to the amateur. It includes practically every item necessary in picture making. Undoubtedly the amateur will find a great deal to interest him in this folder, as among the items listed are many things that will materially aid him in his picture making. This Bargaingram will be sent to any interested amateur by the Bass Camera Company if they will address that company at their Chicago office.

Lens Shade and Filter Holder

• The Hollywood Camera Exchange announces a new combination lens shade, filter and disc holder. This holder will accommodate the 3-inch square filters and the standard O. B. Disc.

This combination is light in weight and is designed mainly for still cameras. It fits directly on the lens.



MOVIE FILM FREE!

Here's How you can get a roll of Panchromatic Film Free (8mm or 16mm).

Help us answer the question, "WHAT TO SHOOT?" Perhaps it is a little picture you have already made, or one you would like to make.

What we have in mind is what we term "Backyard Movies," simple little plots that can be made around the house, in the neighborhood, in parks, on vacation trips, at the seashore or bathing beach. Write them out in your own words. They do not have to be in scenario form. List the scenes in sequence in simple language. For each of these continuities we publish in the AMERICAN CINEMATOGRAPHER (The Motion Picture Camera Magazine) we will give a roll of Panchromatic Film Free to the authors.

These continuities do not necessarily have to tell a story; they might be of a documentary nature. The way in which you have taken the picture might be unusually interesting.

Maybe you have conceived a little continuity around your hobby, your business or children or some phase of home life . . . send it in; it may win you a roll of Panchromatic Film.

Send as many plots as you wish, only write each one on a separate piece of paper. Be sure to have your name and address on the same sheet of paper and please write on on side of paper only.

Here's your chance to get film free!

ADDRESS YOUR CONTINUITIES TO.

EDITOR

AMERICAN CINEMATOGRAPHER

6331 Hollywood Boulevard **Hollywood, California**

Bass bought 'em all!

A gigantic cash purchase of over 400 new guaranteed Super Value—Super Illumination Projectors.

STEWART WARNER

500 watt, extra brilliant lens—High speed rewind—forward and reverse—separate light switch for lamp — low priced bulb — pilot light. Compact, smooth running and biggest value at regular price of $125.00. What a buy!

$87.50 Complete with case, cord and reel

ONE YEAR FACTORY GUARANTEE

With Each Instrument

Extra 1" W. A. lens at.....$5.50
Extra 1½" W. A. lens at.....$5.75
Extra 3" Long Throw Lens.....$7.75

Your old projector, any make, accepted in trade.

WRITE! Bass Bargaingram No. 212 is ready. Mailed Free.

Dealers Write For Details

BASS CAMERA COMPANY
179 W. Madison St., Chicago

Camera Headquarters for Tourists

How I Made "Life"

(Continued from Page 412)

in the case of Eastman Super-Pan, down till you see the perforated numbers. This is where the laboratory starts development and proves a most accurate place to set your dial. Then I switched to the other mask (which would block off the lower right side of the picture) and after putting the neutral density filter in place and squaring up the matte-box I began shooting the so-called dreams (sand-pile, skating, sliding, riding—right down to that 18-foot mark, where we went out to a nearby stream for a two-foot fishing scene. It took practically all one Sunday to leisurely get this 20-foot shot, but it came out perfect the first time and I look upon it as the best result I have ever accomplished. Try it some time—you'll surely enjoy the result.

Now just a little about lap dissolves. A succession of six quick dissolves gets Bob out of bed, hands and face washed and wiped, teeth brushed, sleeper off and shirt and overalls on—down to the breakfast table. This is a good afternoon's work. One point here is interesting. There is no place to cut a dissolve, as the action took us to three different parts of the house where lights and reflectors had to be set up and adjusted—great care had to be taken to correctly time all these actions and go over each one in practice at least three times before filming. At that I had to retake this sequence for in the last scene Bob put on his overalls without his shirt. There is a fade-out here and when the next scene opens at the breakfast table he appears in shirt and overalls. There was nothing to do but retake these dissolves. Two weeks later with everything set up to retake I noticed that Bob had a new hair cut—nothing to do but wait another week. In Hollywood, I believe, they have a regular job for someone just to watch for details such as these.

These dissolves were made with a 70DA Filmo equipped with a crank for backing up the film. A good lap dissolve should occupy about two feet of film, which finishes to about a foot of actual dissolve. Of course, they can be made a lot shorter, depending on the action desired. A good way to learn dissolving is to practice (without film) by watching your crank turn and learning to count slowly with the turn. Then with this count in mind learn to smoothly close the iris diaphragm of your lens from the exposing stop. The most important thing to learn is to be able to back crank (with hand over lens) to the approximate place on the film where you began to close your lens. In two foot dissolves with a Filmo it takes four turns of the crank. Then, of course, you start your new scene from the closed stop and iris in your lens the same way to the exposing stop you are using for this scene. Don't let your enthusiasm for dissolves lead you astray. There are certain places where they should be used, but this practice can be very easily overdone—just as the use of certain red filters can be easily overdone. A good variation in dissolves can be accomplished by the use of a Vignetter in place of the lens diaphragm. This can again be varied by the use of both. Take your scene off with the lens diaphragm, then bring in your new scene with the Vignetter (opening it from the closed position). Be sure your lens has previously been correctly set for proper exposure. This will give you the effect of the new scene burning into the center of your picture and expanding toward the edges as the old scene fades out.

In conclusion, I want to list some rules that I have made for myself in future work of this kind:

1. Get a good, simply story—go over it thoroughly with your actors—with children be sure they really know what you are trying to do. I found that a screening of the first "rushes" before htme got them into the spirit of the work and many times after that I was checked or corrected by the kids themselves.

2. Don't hurry—don't tire your actors or yourself. Fifty foot rolls will save film wastage.

3. Choose handy, accessible locations and note exposure and time of day; you may have to come back later for another shot.

4. Have a good exposure meter—and always use it.

. In lighting interior scenes (a volume could be written)—in addition to conventional lights, try using a high spot light for back lighting your subject. It adds a very pleasing third dimensional effect. The use of reflectors outdoors is always worth the extra effort.

6. If the unexpected happens—as is very often the case with children—it may prove better than you had planned—try to vary your story accordingly—this happened in "Life."

Filming the Music Lesson

(Continued from Page 413)

Scene 33. Close-up of professor's hands playing smoothly. Fade out.

Of course if you want to carry on from this to the girl playing out in the yard or further scenes of her sneaking out of the front door, it will add to the picture.

The thing that makes this picture a bit unusual is the reaction of the animals to the discord and to the harmony. It

puts an interesting touch to the picture —in fact, it makes the picture an interesting document.

If the animals listed in the picture are not a part of the household you can substitute a cat if you have it or a neighbor's cat—or some other animal on the street can be shot from time to time when you can get the proper action.

It might be difficult to get a dog howling. If you can get him to snap his head up and shoot at 8 a second you will get fast motion on the screen and get the impression of the discord—or something happening that is unusual. Eight pictures a second might also help with the bird fluttering in the cage.

Employing the close-ups as indicated eliminates a lot of acting on the part of the professor and the girl—which frequently is desirable, as it is difficult to secure the right impressions from amateurs.

Table-Top Sequences

(Continued from Page 410)

them the inexpensive "Simplex"—and then, between each frame, move the arms, legs, or body of the doll to give the right effect of motion. This will take a bit of experimenting: your action (or, as it is professionally called, "Animation") must be reasonably smooth, so the best way to do is to move things only a little, and make one frame of each stage of motion. In some actions, however, you may separate the stages farther, and make two or three frames. It's a long, hard task—especially if you are using more than one character—but it's interesting, and I guarantee that the result will thrill the kiddies. What youngster wouldn't be thrilled at seeing her own favorite dollie walking around on the screen, quite as though she were alive?

For stop-motion work, your lighting should be relatively soft, and more nearly from the front: since your exposures are longer, you can either stop down more, or use less light; I'd recommend the former.

And, as a thought on either of these ideas suggested: why not plan a little photoplay of the children, showing them playing with the toys, growing tired, and falling asleep: then the table-top sequence can come in as a dream. Two or three hundred feet of 16mm film will give you a first-rate production of this type (only fifty or a hundred feet need be used for the dream—especially if it's stop-motion). And does it give you something unusual for your library? Ask the audience: they'll say "Yes—AND HOW!"

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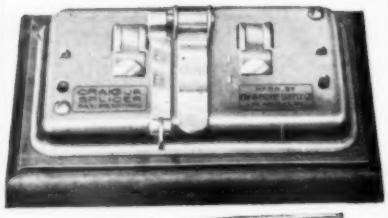

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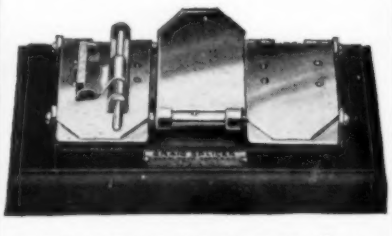

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Making Better Titles

(Continued from Page 414)

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Water to ..... 32 oz.

The developing solution is compounded of equal parts of Solutions 1 and 2. In warm weather, this may be diluted somewhat, if desired. With this solution, development may be prolonged almost indefinitely without greying the whites; and it gives exceedingly rich blacks.

Occasionally, an amateur, in the course of titling one of his films, finds himself called upon to make an "insert" of a white card with black lettering—say, for instance, some printed announcement, a letter, or a newspaper-clipping—which he wishes to reproduce on the screen exactly as it is: i.e., black letters on a white ground. Of course, one can use reversal film for this, or he can treat it as a regular title, thereafter making a print from the title-negative. It is, however, quite possible for the amateur to reverse his own film for this purpose, following any of the methods outlined in the Appendices of the "Cinematographic Annuals." Using positive film for this, and developing it with Mr. Schon's developer until the film, on inspection, appears practically opaque, he can then reverse the image chemically, either with the prepared reversing solutions marketed for use with Agfa and Autochrome color-plates, or with this solution, which is recommended by Messrs. Pathex, for reversing their 9.5mm film:

REVERSING SOULTION

Potassium Permanganate..... 30 grains
Sulphuric Acid .....170 minims
Water to ..... 35 oz.

The acid should be added last, in a slow stream, stirring the while. In reversion, the negative is dissolved away, and the film takes on a red color. This normally takes from seven to ten minutes, but should in any case be continued until all of the black image is dissolved. If you have both orange and red lights in your dark-room, the red one may be removed after the film has been five minutes in this bath, and the remainder carried out by orange light.

After reversion, the film is washed until it becomes a clear yellow—usually about seven minutes. The remaining operations may be carried out in white light.

The next step is bleaching, by the following formula:

BLEACH

Sodium Sulphite (crystals)....150 grains
Sulphuric Acid ..... 35 minims
Water to ..... 35 oz.

The film is immersed in the bleach until the parts formerly densest become quite transparent.

The final step is darkening, which is done in a solution made by adding 150 grains of Sodium Hydrosulphite (not Hypo) to the bleaching bath. The film is placed in this until a good positive is produced. Thereafter, it is washed and dried.

Another problem in home title-making is that of fading, which is normally impossible in direct-positive titles. However, Mr. A. D. Frischmann, of the Brondesbury Cine Society, of London, in a letter to the British Journal of Photography, has suggested an interesting method of fading. "The whole title," he says, "is first shot in the ordinary manner, preferably at full aperture, and, after a careful note has been made of the footage used, the film is run back. The title is then replaced by a plain white card, and with the lens at full aperture, the camera is started and the iris diaphragm closed right down, the camera being stopped when the smallest aperture is reached. The lens is now covered, and the camera run to within two feet of the total footage previously exposed. The lens is now uncovered, and, with the camera running again, the iris diaphragm is slowly reopened to full aperture. It will be found, on development, that the title is perfectly faded in from blackness and out again."

There Must Be a Reason for Every Light

(Continued from Page 411)

artist before he starts filling in with clever touches that make the painting worthwhile.

The sole purpose of basic illumination is to give sufficient light to secure a sufficient exposure. Only after this is accomplished can more lights be added to secure effects and artistic touches. The cinematographer is an artist as well as a painter, only his medium of expression is light. We may say that the paint he uses is light; in other words, he paints with light.

The action and type of story controls these touches or, as it is termed in the studio, "the fill-ins." No matter what you shoot you must have enough light to make an exposure; then from that point on you display your artistic touches This phase of lighting we will discuss in further articles.

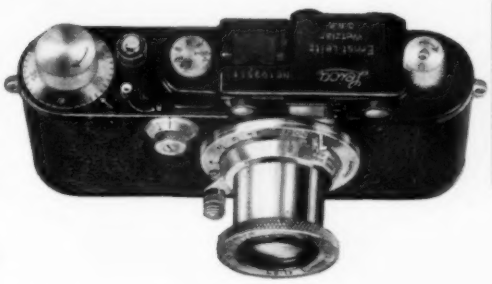
Film Your Business!

(Continued from Page 415)

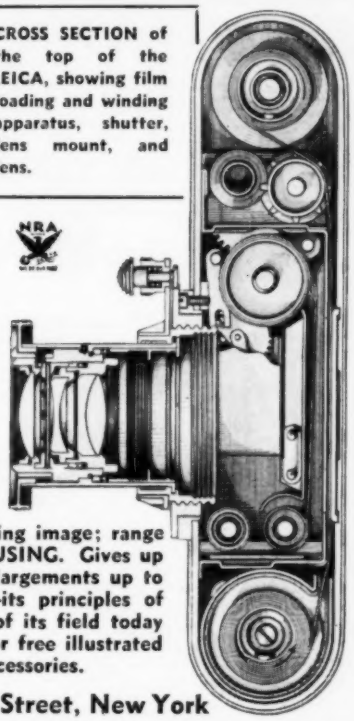
production of "Milk—Its Production and Pasteurization." Dr. Baxter's work is apparently connected with the State's medical supervision of the Dairy Industry. As a cinamateur, he was clearly in a position to realize the value of visual presentation; and as a Public Health official he was similarly in an enviable position to film his subject. Since he was making the picture not alone for his pleasure in filming it, or for showing to a general audience, but also to be used in both general and specific educational work, he adopted a very simple, straightforward style. His story, as the title indicates, was that of milk, from the cow to the bottle. Therefore he began by showing the most sanitary dairy equipment and methods; how the cows were kept, fed, cleaned and milked; then, how the milk should be strained and cooled on the farm itself. At this point, he introduced a sequence depicting the Public Health Service's field-staff doing their bacteriological inspection work on the dairy farms. The next stage showed how the milk is received at the local dairy plant; how it is weighed, analyzed for butterfat-content, bacteriological content, etc.; pasteurized (and I wonder how many people know that pasteurization is **not** boiling?) cooled, and bottled. He shows throughout—sometimes with interesting, animated sequences—the many precautions taken throughout; approved styles of bottles and bottle-caps, and, at last, the delivery of the milk to the consumer's doorstep. Like Schon's engraving picture, it makes one gasp, "How can so much be done in just a few hours —and so cheaply?"

George Meehan, A.S.C., Makes Canadian Feature

• George B. Meehan, Jr., A.S.C., has just returned from Victoria, B.C., where he photographed a Canadian-made feature production, "The Black Robe," for Commonwealth Productions, Ltd., of Victoria. Cinematographer Meehan states the Canadians are doing very creditably in their efforts toward producing motion pictures in Vancouver and Victoria, but that they are seriously hampered by lack of equipment, due to the unduly high duty (usually in excess of 60 per cent) levied on all imports of studio and photographic equipment.



CROSS SECTION of the top of the LEICA, showing film loading and winding apparatus, shutter, lens mount, and lens.



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Candid Photography on the Streets

(Continued from Page 399)

of the complex form of animation. A strip of motion picture film will readily illustrate this point. It will also show that if you watch your subjects carefully, even though they are in action, you will find spots when natural pictures can be made.

Of course street photography should be of the candid type. It differs, however, from the candid photography that you are accustomed to seeing in the papers and the magazines. They are photographs made of people, that are "in the public eye." People who expect to be photographed. Photographs made on the streets are of people who see no reason or cannot understand why they should be photographed. So when you are caught making a point-blank close-up of someone, you are in a rather embarrassing position. What a logical situation, for that well-known cigarette advertisement, "Be Nonchalant."

A detected camera will cause the most interesting countenance to become affixed with a dumb stare; worse yet, anger! There are many ways of concealing the camera. I purposely chose illustrations for this article, that I had made without subterfuges of any sort. I only exercised care not to make any quick movements, that would attract attention. It is really surprising how much you can get away with if you are watchful. I have successfully used the Leica, hidden in a small box, wrapped and tied like a parcel. A very small hole was in the top of the package to allow for winding of the film and to change the shutter speeds. I allowed the standard Leica lens-shade to project about one-eighth of an inch through a hole in the side of the box. By a couple of marks on the package and lens-shade, I was able to change focus. To make a picture, the parcel was pointed at the subject and with one finger through the hole in the top the shutter was tripped. Practice will enable you to judge very closely your approximate field without the aid of a view-finder. Only in extreme cases will you find it necessary to conceal the camera in this manner. One word of caution, however, look out for children. Their roving eyes quickly detect the presence of a camera, and they are not the least bit backwards in drawing the attention of everyone to it.

Unless extremely fast film is needed, it is important to use films of a fine grain variety. This will permit enlarging of only the most interesting portion of the negative to a large size. Shutter speeds should be sufficient enough to just stop the action. Normally this will vary from one-twentieth to one-hundredth part of a second. At night it may be necessary to go down as low as one-tenth of a second. Use the slowest shutter speed possible, so that you may stop the lens down to the utmost to secure greater depth.

The variety of subjects will vary with the size of the city and its geographical location. Some cities have large foreign quarters. Interesting situations are always found there. As foreigners gesticulate a great deal as they are talking, photographs of them are often very expressive. With the longer focal length lenses, many shots may be made from automobiles and bus tops. It is not necessary to confine your photography to the business streets as many engaging things are found in the residential sections. Hucksters, ragmen, children at play, and the like suggest themselves as subjects. In the parts of the country that have snowfall, the number of subjects multiply, as snow changes everything. In making pictures during a snow storm do not use a shutter speed greater than one-twentieth of a second. This will allow the snow to blur, thus giving a more natural and atmospheric picture. Candid pictures are easily made on inclement days, as the weather distracts people's attention. Many very pleasing photographs may be made on the streets at night. This is a field in itself and will be dealt with in another article.

A Fireproof Process Screen

(Continued from Page 406)

The basic principle underlying this control, explains Mr. Bodde, is that of the polarization of light, and control of this controls the "hot spot." "By measurement with a photocell photometer," he states, "we find that in most installations the difference in intensity between the so-called 'hot spot' and the edges of the projected picture is about 65 per cent. Now, while I do not want to claim that my screens will absolutely eliminate this 'hot spot,' I do state most positively that measurements show that on my screens, when the screen is properly balanced to suit the projection-installation, the difference in intensity between the center and the edges is less than 5 per cent. In other words, we re-

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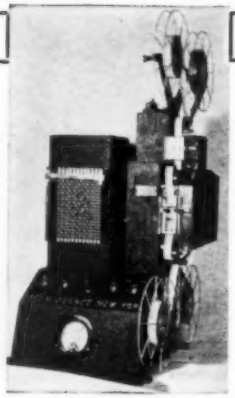
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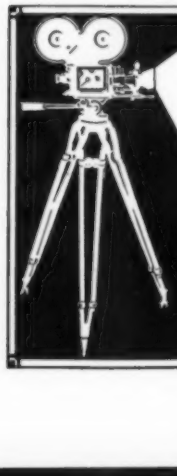
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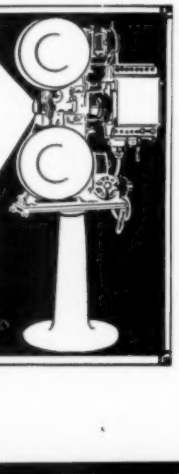

duce the disparity in intensity which causes the 'hot spot,' to a point where it is within the margin of control afforded by the latitude of the film and processing."

As may be inferred from Mr. Bodde's statement, the screens may—either during their manufacture or afterwards—be accurately balanced so that they coordinate perfectly with the optical characteristics of the background projector system used. This operation requires approximately an hour. It may also be mentioned that these screens are held to be, not only fireproof, but waterproof, and virtually immune to ordinary abrasion. Therefore, they may be rolled for storage or shipping, with far less risk than with ordinary screens. Mr. Bodde has also evolved an improved system of mounting the screens for use. Wooden rods are threaded through sleeves provided for the purpose, and the screen, instead of being laced into place with long rubber shock-cords, is held in place by heavy rubber bands which are simply looped through eyelets in the screen, and hooked onto the frame.

Cinematographers' Short-Cuts

(Continued from Page 397)

into the camera, would give the film an additional punch. Again, Cinematographer Clark was called upon to improvise. This time, he dug up a large mirror; he placed it at the end of a long outrigger, directly in front of the gun. Setting up the camera beside the gun, with the mirror tilted slightly, he was able to photograph the reflection—and get the desired effect.

Once, when making an air film for Fox, Cinematographer Clark found himself in need of a special camera-mount. Once more, he improvised, as the illustration shows. The camera used was a standard DeVry, which he mounted on a special angle-plate mounting, so that an electric motor could be used, making longer scenes possible. The camera was mounted on a light tripod-head, which was, in turn, mounted on a triangular frame of angle-iron and tubing. This was clamped onto the vertical fin of the plane by means of the large wood-and-metal clamp shown, and held in place by guy-wires. The shot required that the camera be panned as the ship steered; so Clark worked out a simple system of levers, attached on one end to the tripod-head, and on the other to another wood-and-metal clamp fixed to the rudder, which was fortunately of the "balanced" type. By this means, the pilot was able not only to photograph himself in the air, but to "pan" the camera as he steered the ship.

Recently, Cinematographer James S. Brown, A.S.C., making an independent production of the "gangster" type, was called upon to make some night-effect "chase" sequences, in which several automobiles and motorcycles figured. Neither time nor budget permitted him to follow the normal course of rewiring the cars' headlamps with high-intensity bulbs and special batteries—so he improvised. He removed the headlight-lenses, replacing the glass with burnished tinfoil, stretched tightly, making miniature reflectors. To illuminate these, he arranged a group of "hard" reflectors in such a way that, throughout the car's movements in the shot, one or another of them would constantly reflect the sunlight into the headlamps of the car, which, in turn, reflected it back into the camera. Then, using a 72 filter in the usual manner, he was able to secure his shot exactly as ordered. At times, he was able to use this on three or four cars at once; and in one scene, by using a mirror, which reflected the sunlight into a reflector, which, in turn, threw its beam into the headlamps, he was able to "turn" the lamps on and off, as the action indicated.

Boyle Picture Scores Triumph

• The premiere of "Sweden, Land of the Viking," made in its entirety in color by John Boyle, A.S.C., held in Boston, Mass., at the Tremont theatre was hailed by the critics of that city as one of the finest travel features presented. In reviewing this production the Boston American said: "Some call it Sweden; this writer will call it heaven."

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Flint: Gardner Photo Service.
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Photo Service Shop, 44 Monroe Ave.
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(Continued on Page 428)

Measuring Color Intensities

(Continued from Page 396)

coloring, effective in the case of actresses for a street wear and personal appearances.

From there, taking into consideration the measurement of photographic reflecting powers of colored objects, filter factors, etc., it will be possible to transfer this established visual balance between the costume and the individual to the film in more perfectly balanced blacks and grays. These may be brought into proper relation to the background and still be complementary to the coloring of the individual as it registers on the film. While the colors in the costumes will, of necessity, be of different value than those for street wear, still, this newer method will enable those having artistic supervision, to carry what we might term the "personal" colors of the individual through for use in photography. Not only will these scientifically determined color intensities photograph in balance with the actress and the background, but will afford her the valuable psychological stimulus of knowing she is wearing the colors best suited to her own coloring and personality.

In addition, by means of these new copyrighted aids, more intelligent use of color in settings and backgrounds may be achieved. Art directors will be enabled to work from known values placed in balance and transfer these into correct intensities so they will be in photic balance.

The writer is confident that use of this scientific approach to the use of color intensities for black and white photography will be a great impetus to the continued evolution of the motion picture into a more artistic and significant force.

We have all seen instances where concentration upon the relationship of blacks and grays in sets and backgrounds has been to the disadvantage of the players, with consequent injury to the entire tonal composition—cases where the actors, most vital and important of all the factors involved, have fallen short of registering in the desired manner.

These instances are far too many and result from improper use of color in costuming and make-up in relation to the other factors—audiences are still primarily interested in the characters and the story they unfold. Without detracting in any way from the importance of bringing settings in correct tonal balance, it still remains that all this effort is, to an extent, valueless, if the characters themselves are not properly photographed.

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WASHINGTON

Bellingham: Clyde Banks, 119 W. Holly St.

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Wheels of Industry

(Continued from Page 398)

Photography (especially with modern materials and methods) is preeminently a medium by which we can render tones and delicate gradations. Let us make the most of this fortunate circumstance to enhance the beauty of our work. Keep the range of tones within the limits of the film, and avoid crude, startling, or uncertain tones. We must cultivate the ability to see everything pictorially and must use the subject-matter as so much picture-material.

Tone is also of great importance in suggesting depth or the third dimension in photography. Inasmuch as both film and screen are flat—two-dimensional—we can only suggest the third dimension, or depth, by technical tricks; chief of these are perspective and tone. If we examine a landscape in sunlight, we find that in the foreground we have very great contrasts in light and shadow; the sunlight, striking the nearby objects, makes them unusually brilliant, while adjacent shadows seem darker by comparison. In the middle distance, this contrast becomes less marked: the light objects are still bright an dthe shadows dark, but with less contrast than in the immediate foreground. But in the far distance, on the horizon and on the mountains, the highlights have lost more of their brilliance, and we see no black shadows; the distance has "greyed" all tones. If our picture does not show this differentiation of tones as it recedes from the eye we have lost that normal effect of depth and perspective.

It is all well enough to talk about the control of tones and key in cinematography—but how are we to accomplish this? Let us consider an ordinary scene: to photograph this in a normal key—that is, a series of tones which strive to imitate the natural effect of the scene photographed, with a normally wide scale of tones—we would simply use normal photographic practice throughout: correct exposure, correct development, and correct printing. But suppose that we want to add to this same landscape a feeling of spring—freshness—joy. Instead of portraying this in a naturalistic manner, we must now crowd our tones toward the highlights. In the original scene, our highlights were white, our half-tones a wide range of greys, and our shadows black. Now we must make our highlights white, our half-tones a shorter range of light greys, and our shadows medium grey. The technical methods by which this is achieved are overexposure, normal development, and light printing.

Now we take the same scene again, but with the desire to impart a feeling of vagueness and mystery. To do this we must crowd our tones into the greys, so that our highlights become light grey, our half-tones remain in the middle greys, and our shadows become dark grey instead of black. This can be done by overexposure, normal development, and heavier printing, or by normal exposure, and underdevelopment.

Once more we take the same scene: this time trying to express sombreness, severity and grief. Now we crowd all the tones toward the shadows. Our highlights become grey instead of white, our half-tones darker greys, and the shadows remain black. This can be accomplished by normal exposure, underdevelopment, and deep printing.

Yet another effect may be obtained by retaining only the ends of the scale: the highlights and shadows—practically eliminating the intermediate greys. This emphasizes the highlights, and may be done by extreme underexposure, with normal development and printing.

Jackson Rose, A.S.C., Honored

• In listing "What's Who in Pictorial Photography," the American Annual of Photography pays high tribute to Jackson J. Rose, A.S.C., who is listed as one of the outstanding pictorialists of the year. Out of a group of fifty-two names, ranked as the leading exhibitors of Pictorial Photographs at the world's Salons during the past year, there appear but twenty-seven Americans, among whom is Mr. Rose, credited with having had fifty-two prints accepted at sixteen major Salons and Exhibitions during the year.

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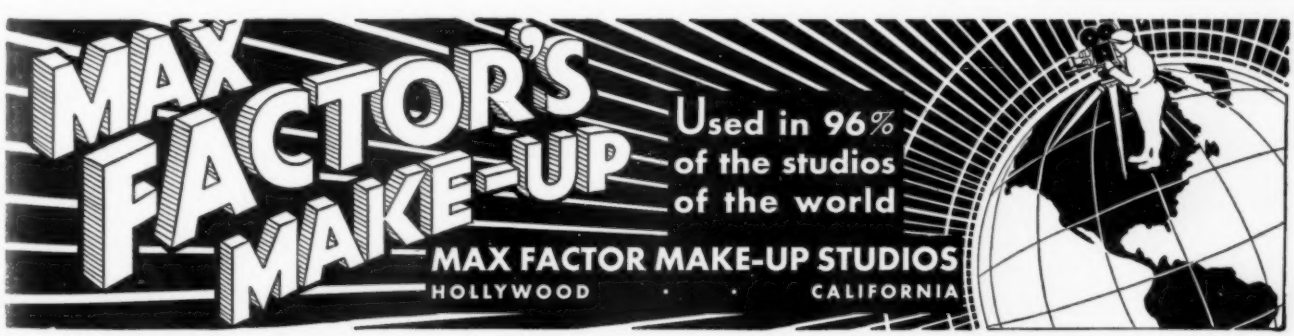

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FOR SALE—Real bargains in 16 and 35mm movie equipment and still cameras, newest types cameras and projectors in all popular makes. Save money on film, lights, lenses and all essential accessories. Our 36 years of experience stands back of every sale. Before you buy, send for our new bargain booklet. Burke & James, Inc., 223 W. Madison St., Chicago.

FOR SALE—Model C LEICA camera; f:2.5, 50mm lens; f:3.5, 35mm lens; f:4.5, 135mm lens; HCE Sunshade; range-finder; special viewfinder; 6 magazines; Universal and Sport cases; A-1 condition; $150.
6½x9cm MENTOR boxform Reflex; Rietzschel Prolinear lens, f:1.9, 13½cm focus; 3 plateholders; filmpack adapter; special sunshade; a special color-filter; 3 special diffusion discs; sole-leather case; A-1 condition; $150.
KORONA Pictorial View Camera, 4x5; Struss Pictorial Lens; Thornton-Pickard Shutter; cutfilm holders; case, and Korona tripod; $55. LYNN-CLARK LABORATORY, 1730 Hillhurst Avenue, Hollywood, Calif. Phone NO-4200.

FOR SALE—CAMERAS

FOR SALE—Bell & Howell adapter for Mitchell Tripod head, 40-50-75-M.M. Astro lenses mounted and unmounted, Mitchell tripod head, Mitchell matte box. J. R. Lockwood, 523 N. Orange St., Glendale, Calif. Douglas 3361-W.

FOR SALE—New 70D-A Bell & Howell 16mm Camera, Brown model. P.O. Box 1204 Arcade Station, Los Angeles, Calif.

FOR SALE—3¼x4¼ Butcher "Pressman" Reflex, 6 in. Cooke f:4.5 lens, reversible back rebuilt for Graflex attachments. Includes case and Graflex plateholders, rollfilm and filmpack adapters and cut-film magazine; $75. Box S, care American Cinematographer.

FOR SALE—3¼x4¼ Korona Pictorial View camera case, 11ex Acme shutter, six cutfilm holders. Box S, care American Cinematographer.

FOR SALE—Bell & Howell Cameras, $800 up. Mitchell Cameras, $1600 up. Akeleys, $750 up. Camera Supply Co., 1515 N. Cahuenga Blvd., Hollywood, Calif.

FOR SALE—Universal camera, 3.5 lens, four 200 ft. magazines, sole leather case, in good condition, $75. 35mm step printer cheap. George Horst, 311 E. Cliveden St., Philadelphia, Penna.

16mm BARGAINS—Free 65 page catalogue. Film Library sound silent. Film $1.00, 100 ft. Mogull Bros., 1944-H Boston Road, New York City.

FOR SALE—Spring Drive 16 mm camera and motor-driven projector, combination, $30 and up; 2 Q.R.S. standard Sound-on-Film Projectors. Completely equipped. $500.00 for both. Harry's Camera Shop, 317 W. 50th St., New York City.

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FOR SALE—Late Model Akeley Camera No. 269—35mm, 50mm, 75mm f:2.7 matched Zeiss lenses, also 4½ in. Zeiss f:4.5 matched lenss—Goerz mat box and Sunshade—4 magazines—Akeley Gyro Tripod—Cases for all, $550. Ries & Fitzpatrick, 1557 Vine St., Hollywood, Calif., phone GLadstone 1521. Cable address Cinecam.

FOR SALE—Like new. B & H 5-way Sound Printer, also Cinex Light Tester. 4-wheel inflated tire dolly. Model C and Model D Moviola. Cheap for cash. Box HC, American Cinematographer.

FOR SALE—Bell & Howell used positive splicer. Stand. type. New set blades, excellent condition. $250. Camera Supply Co., Ltd., 1515 N. Cahuenga Blvd., Hollywood, Calif.

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FOR SALE—Special complete 16mm editor with geared rewinds, magnifier and splicer, $4.50 plus postage Money refunded if not satisfactory. FOTOSHOP, 136 W. 32d St., N.Y.C.

FOR SALE—Akeley Gyro Tripod, set Cooke f:2.5 lenses in B. & H. mounts, miscellaneous accessories for Bell & Howell and Mitchells. J. Burgi Contner, 723 Seventh Ave., New York City.

WANTED

WANTED—WE HAVE CASH waiting for used Bell & Howell camera heads with or without shuttles. Also fast lenses in mounts, cinemotors, high speed shuttles and general camera accessories. Quote us your lowest price, serial numbers and description. Ruby Camera Exchange, 729-7th Ave., N. Y. C.

WANTED—EYEMO 71-C, will exchange new Filmo 70-DA 1 in. and 3 in. lenses. Stireman 16mm 200 ft. tanks 2 reels $35. Miller, Apartado 945, Havana, Cuba.

WANTED—Sound Recording Equipment complete for commercial use, using 35mm film. New or used. E. D. Goodwin, 2318 S. Royce St., Sioux City, Ia.

WANTED—6 or 6½ in. B & L Dallmeyer Lens with plano-convex finding lens for Akeley. Must be bargain. Arthur Rossi, 46 Farragut Ave., Providence, R. I.

WANTED—Motor adapter. J. R. Lockwood, Glendale. Douglas 3361-W.

WANTED—16mm. silent films of curiosity, historical, early events in movies, thrill, and other out of ordinary films. E. Sullivan, 3939 Flad, St. Louis, Mo.

WANTED—Someone to finance development of a practical 3 color separation camera and printing process. Box G. A., care American Cinematographer.

WANTED—Mitchell High Speed Silent Camera, box only, without equipment. Must be cheap for cash. Box 140, American Cinematographer.

WANTED—Leica Camera and model good condition. Cheap. Box C, c-o American Cinematographer, 6331 Hollywood Blvd., Hollywood, Calif.

WANTED—Motion Picture and Still Cameras, all types, Laboratory Equipment, Lenses, Finders, Leica Cameras. Cash for bargains. Camera Supply Co. Ltd., 1515 Cahuenga Blvd., Hollywood, Calif.

WANTED—Used Leica and Contax Cameras and accessories. Must be cheap for cash. Box 235, American Cinematographer, 6631 Hollywood Blvd., Hollywood, Calif.

(Continued from Page 428)

Pullman: Graves Studio.
Seattle: Anderson Supply Co., 111 Cherry St.
Eastman Kodak Stores, Inc., 1415 - 4th Ave.
Lowman & Hanford Co., 1514 - 3rd Ave.
Spokane: John W. Graham & Co., Dept. C, 707 Sprague Ave.
Joyner Drug Co., Howard & Riverside Ave.
Tacoma: Eastman Kodak Stores, Inc., 910 Broadway.
Walla Walla: Book Nook Drug & Stationery Store.

WEST VIRGINIA
Wheeling: Twelfth St. Garage, 81 - 12th St.

WISCONSIN
Fond du Lac: Huber Bros., 36 S. Main St.
La Crosse: Moen Photo Service, 313 Main St.
Madison: Photoart House, 212 State St.
Milwaukee: Eastman Kodak Stores, Inc., 737 N. Milwaukee St.
Boston Store, Wisconsin Ave. & 4th St.
W. E. Brown, 327 W. National Ave.
Gimbel Bros., E. Wisconsin & N. Plankington.
Roa Meuer, The, 226 West Wells St.
Phillips: Jakoubek's', 132 N. Lake Ave.
Racine: Photo-Crafts Shop, 526 College Ave.

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Honolulu: Eastman Kodak Stores, 1059 Fort St.

INDIA
Bombay: Continental Photo Stores, 255 Hornby Road.
P. C. Eranee Sons, Albert Bldgs., Hornby Road.
Calcutta: Photographic Stores & Agency Co., 154 Dhuramtolla St.
M. L. Shaw, 5/1 Dhuramtolla St.
Lucknow: Lucknow Commercial Co., 25 Aminabad Park.

MEXICO
American Photo Supply Co. S.A., Av. F.I. Madero, 43, Mexico, D.F.

POLAND
Warsaw: Polska Agencia Prasy Filmowej Wspolna 35.

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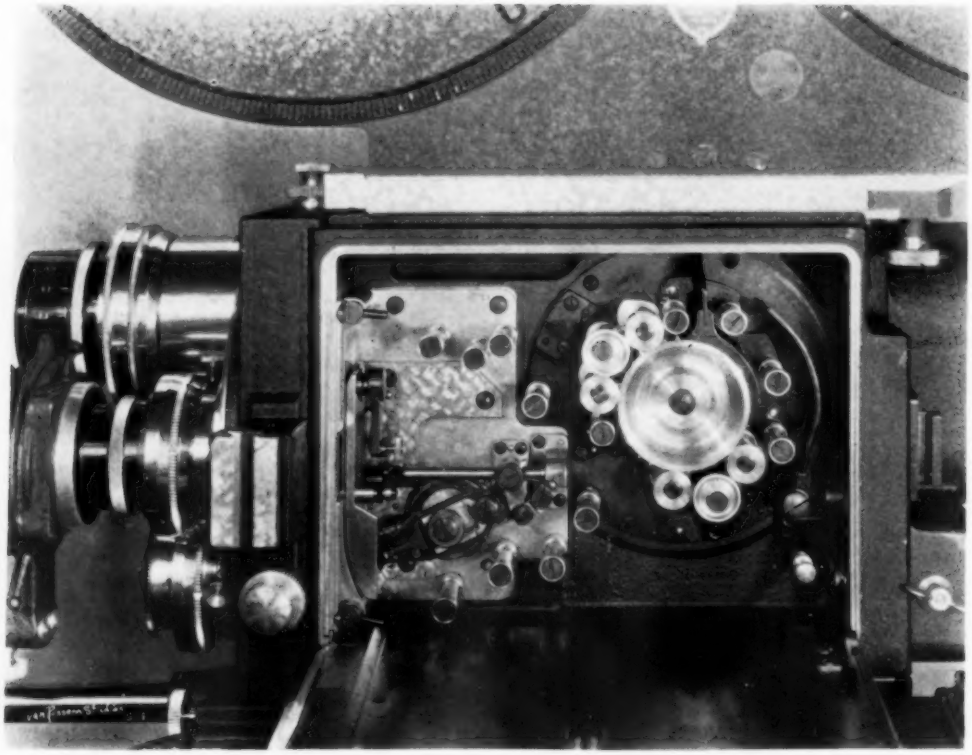

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